

DRAUGHT *and Cording of Looms*, signifies, among *Weavers*, the art of adapting those parts of a loom which move the warp, to the formation of various kinds of ornamental figures upon cloth. In every species of weaving, whether direct or cros, the whole difference of pattern or effect is produced, either by the succession in which the threads of warp are introduced

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produced into the heddles, or by the succession in which those heddles are moved in the working. The heddles being stretched between two shafts of wood, all the heddles connected by the same shafts are called a leaf, and as the operation of introducing the warp into any number of leaves is called drawing a warp, the plan of succession is called the draught. When this operation has been performed correctly, the next part of the weaver's business is to connect the different leaves with the levers or treddles by which they are to be moved, so that one or more may be raised or sunk by every treddle successively, as may be required to effect the pattern required. These connections being made by coupling the different parts of the apparatus by cords, this operation is called the cording. In order to direct the operator in this part of his business, especially if previously unacquainted with the particular pattern upon which he is employed, plans are drawn upon paper, specimens of which will be found in *Plate XII. Miscellany*. These plans are horizontal sections of a loom, the heddles being represented across the paper at A, and the treddles under them, and crossing them at right angles at B. In *figs. 1 and 2*, they are represented as distinct pieces of wood, those across being the under shaft of each leaf of heddles, and those at the left hand the treddles. In actual weaving, the treddles are placed at right angles to the heddles, the sinking cords descending perpendicularly, as nearly as possible, to the centre of the latter. Placing them at the left hand therefore, is only for ready inspection, and for practical convenience. At C, a few threads of warp are shewn as they pass through the heddles, and the marks denote the leaf with which each thread is connected. Thus in *fig. 1*, the right-hand thread, next to A, passes through the eye of a heddle upon the back leaf, and is disconnected with all the other leaves; the next thread passes through a heddle on the second leaf; the third through the third leaf; the fourth through the fourth leaf, and the fifth through the fifth or front leaf. One set of the draught being now completed, the weaver again begins with the back leaf, and proceeds in the same succession again to the front. Two sets of the draught are represented in this figure, and the same succession, it is understood by weavers, (who seldom draw more than one set,) must be repeated until all the warp is included. When they proceed to apply the cords, the left-hand part of the plan at B serves as a guide. In all the plans upon this plate, excepting one which shall be noticed, a connection must be formed by cording between every leaf of heddles and every treddle; for all the leaves must either rise or sink. The raising motion is effected by coupling the leaf to one end of its correspondent top lever; the other end of this lever is tied to the long march below, and this to the treddle. The sinking connection is carried directly from under the leaf to the treddle. To direct a weaver which of these connections is to be formed with each treddle, a black spot is placed when a leaf is to be raised, where the leaf and treddle intersect each other upon the plan, and the sinking connections are left blank. For example, to cord the treddle 1. To the back leaf put a raising cord, and to each of the other four sinking cords. For the treddle 2, raise the second leaf, and sink the remaining four, and so of the rest; the spot always denoting the leaf or leaves to be raised. The *figs. 1 and 2* are drawn for the purpose of rendering the general principle of this kind of plans familiar to those who have not been previously acquainted with them; but those, who have been accustomed to manufacture and weave ornamented cloths, never consume time by representing either heddles or treddles as solid or distinct bodies. They content themselves with ruling a number of lines across a piece of paper, sufficient to make

the intervals between these lines represent the number of leaves required. Upon these intervals, they merely mark the succession of the draught, without producing every line to resemble a thread of warp. At the left-hand they draw as many lines across the former as will afford an interval for each treddle, and in the squares, produced by the intersections of these lines, they place the dots, spots, or cyphers, which denote the raising cords. It is also common to continue the cross lines, which denote the treddles a considerable length beyond the intersections, and to mark, by dots, placed diagonally in the intervals, the order or succession in which the treddles are to be pressed down in weaving. The former of these modes has been adopted in the remaining plan, upon the plate, but to save room the latter has been avoided, and the succession marked by the order of the figures under the intervals which denote the treddles.

Some explanation of the various kinds of fanciful cloths, represented by these plans, may serve further to illustrate this subject, which is, perhaps, the most important of any connected with the manufacture of cloth, and will also enable a person, who thoroughly studies them, readily to acquire a competent knowledge of the other varieties in weaving, which are boundless. *Figs. 1 and 2* represent the draught and cording of the two varieties of tweeled cloth wrought with five leaves of heddles. The first is the regular or run tweel, which, as every leaf rises in regular succession, while the rest are sunk, interweaves the warp and woof only at every fifth interval, and as the succession is uniform, the cloth, when woven, presents the appearance of parallel diagonal lines, at an angle of about 45° over the whole surface. When there is no other figure upon the cloth, and the fabric is fine, this produces a very pleasing effect, and is much used, especially in the manufacture of silks of various descriptions. Tweeling is also much employed in the coarser descriptions of cloths made from every kind of material employed in the manufacture. In the linen, it is used for sheeting and many other kinds of household cloths which require durability. Many of the stronger kinds of woollen cloths are also tweeled. Goods are manufactured in very great variety in Lancashire from cotton, and many kinds of fanciful tweeling introduced. A tweel may have the regularity of its diagonal lines broken, by applying the cording as in *fig. 2*. It will be observed, that in both figures the draught of the warp is precisely the same, and that the whole difference of the two plans consists in the order of placing the spots denoting the raising cords, the first being regular and successive, the second alternate.

Figs. 3 and 4 are the regular and broken tweels which may be produced with eight leaves. This properly is the tweel denominated *fattin* in the silk manufacture, although many webs of silk, wrought with only five leaves, receive that appellation. Some of the finest Florentine silks are tweeled with sixteen leaves. When the broken tweel of eight leaves is used, the effect is much superior to what could be produced by a smaller number, for in this two leaves are passed in every interval, which gives a much nearer resemblance to plain cloth than the others. For this reason it is preferred in weaving the finest damasks. The draught of the eight leaf tweel differs in nothing from the others, excepting in the number of leaves. The difference of the cording in the broken tweel will appear by inspecting the cyphers which mark the raising cords, and comparing them with those of the broken tweel of five leaves. *Fig. 5* represents the draught and cording of striped dimity of a tweel of five leaves. This is the most simple species of fanciful tweeling. It consists of ten leaves, or double the number of the common tweel. These ten leaves are moved by only five treddles in

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the same manner as a common tweel. The stripe is formed by one set of the leaves flushing the warp, and the other set the woof. The *fig.* in the *Plate* represents a stripe formed by ten threads alternately drawn through each of the two sets of leaves. In this case, the stripe and the intervals will be equally broad, and what is the stripe upon one side of the cloth, will be the interval upon the other, and *vice versa*. But great variety of patterns may be introduced by drawing the warp in greater or smaller portions through either set. The tweel is of the regular kind, but may be broken, by placing the cording as in *fig. 2*. It will be observed that the cording marks of the lower or front leaves, are exactly the converse of the other set; for where a raising mark is placed upon one, it is marked for sinking in the other; that is to say, the mark is omitted; and all leaves which sink in the one, are marked for raising in the other: thus one thread rises in succession in the back set and four sink, but in the front set four rise and only one sinks. The woof, of course, passing over the four sink threads, and under the raised one, in the first instance, is flushed above; but where the reverse takes place, as in the second, it is flushed below, and thus the appearance of a stripe is formed. The analogy subsisting between striped dimity and dornock is so great, that before noticing the plan for fancy dimity, it may be proper to allude to the dornock, the plan of which is represented by *fig. 6*.

The draught of dornock is precisely the same, in every respect, with that of striped dimity. It also consists of two sets of tweeling heddies, whether three, four, or five leaves, are used for each set. The left hand set of treddles is also corded exactly in the same way, as will appear by comparing them. But, as the dimity is a continued stripe from the beginning to the end of the web, only five treddles are required to move ten leaves. The dornock, being checker-work, the weaver must possess the power of reversing this at pleasure. He therefore adds five more treddles, the cording of which is exactly the reverse of the former; that is to say, the back leaves in the former case having one leaf raised and four sunk, have, by working with these additional treddles, one leaf sunk and four leaves raised. The front leaves are in the same manner reversed, and the mounting is complete. So long as the weaver continues to work with either set, a stripe will be formed as in the dimity, but when he changes his feet from one set to the other, the whole effect is reversed, and the checkers formed. The dornock pattern upon the design paper, *Plate A*, may be thus explained: let every square of the design represent five threads upon either set of heddies, which are laid by weavers to be once over the draught, supposing the tweel to be one of five leaves: draw three parallel lines, as under, to form two intervals, each representing one of the sets: the draught will then be as follows:—

4	I	4	I	I	4	I
4	4	I	I	I	4	4

The above is exactly so much of the pattern as is there laid down, to shew its appearance, but one whole range of the pattern is completed by the figure I nearest to the right hand upon the lower interval between the lines, and the remaining figures nearer to the right form the beginning of a second range or set. These are to be repeated in the same way across the whole warp. The lower interval represents the five front leaves; the upper interval the five back ones. The first figure 4 denotes that five threads are to be successively drawn upon the back leaves, and this operation repeated four times. The first figure 4 in the lower interval ex-

presses that the same is to be done upon the front leaves, and each figure, by its diagonal position, shews how often, and in what succession five threads are to be drawn upon the leaves, which the interval in which it is placed represents.

Dornocks of more extensive patterns are sometimes woven with 3, 4, 5, and even 6 sets of leaves; but after the leaves exceed 15 in number, they both occupy an inconvenient space, and are very unwieldy to work. For these reasons the diaper harness is in almost every instance preferred.

Fig. 7, represents the draught and cording of a fanciful species of dimity, which has been manufactured to great extent, although the prevalent taste for simplicity of pattern of the present day has rendered it less an object of demand than formerly. In this plan it will be observed, that the warp is not drawn directly from the back to the front leaf as in the former examples, but when it has arrived at either external leaf, the draught is reversed, and returns gradually to the other. The same draught is frequently used in tweeling, when it is wished that the diagonal lines should appear upon the cloth in a zig-zag direction. This plan exhibits the draught and cording, which will produce the pattern upon the design paper in *Plate A*. Were all the squares produced by the intersection of the lines denoting the leaves and treddles, where the raised dots are placed, filled the same as on the design, they would produce the effect of exactly one-fourth of that pattern. This is caused by the reversing of the draught, which gives the other side reversed as on the design, and when all the treddles, from 1 to 16, have been successively used in the working, one-half of the pattern will be complete. The weaver then goes again over his treddles in the reversed order of the numbers, from 17 to 30, when the other half of the pattern will be completed. From this similarity of the cording to the design, it is easy, when a design is given, to make out the draught and cording proper to work it, and when the cording is given to see its effect upon the design.

Fig. 8, represents the draught of the diaper mounting, and the cording of the front leaves, which are moved by treddles. The mounting, which raises the leaves of the harness, must be taken from the design paper, in a way similar to that used for the draw loom, and as described in that article. From the plan it will appear, that five threads are included in every mail of the harness, and that these are drawn in single threads through the front leaves, as described in the article DIAPER. The cording forms an exception to the general rule, that when one or more leaves are raised, all the rest must be sunk, for in this instance one leaf rises, one sinks, and three remain stationary. An additional mark, therefore, is used in this plan. The dots, as formerly, denote raising cords, the blanks sinking cords, and where the cord is to be totally omitted the cross marks × are placed.

Fig. 9, is the draught and cording of a spot whose two sides are similar, but reversed. That upon the plan forms a diamond, similar to the one drawn upon the design paper, *Plate A*, but smaller in size. The draught here is reversed, as in the dimity plan, and the treading is also to be reversed after arriving at 6, to complete the diamond. Like it too, the raising marks form one-fourth of the pattern. In weaving spots, they are commonly placed at intervals, with a portion of plain cloth between them, and are generally placed in alternate rows, the spots of one row being between those of the other. But as intervals of plain cloth must take place, both by the warp and woof, two leaves are added for that purpose. The front, or ground leaf, includes every second thread of the whole warp. The second, or plain leaf, that part which forms the intervals by the warp. The remaining

remaining leaves form the spots; the first six being allotted to one row of spots, and the second six to the next row, where each spot is in the centre between the former. The reversed draught of the first is shewn entire, and is succeeded by twelve threads of plain. One-half of the draught of the next row is then given, which is to be completed exactly like the first, and succeeded by twelve threads more of plain, when one set of the pattern being finished, the same succession is to be repeated over the whole warp. As spots are formed by inserting woof of coarser dimensions than that which forms the fabric, every second thread only is allotted for the spotting. Those included in the front, or ground leaf, are therefore represented by lines, and the spot threads between them by marks in the intervals, as in the other plans.

The treddles necessary to work this spot are in number fourteen. Of these, the two in the centre, A, B, when pressed alternately, will produce plain cloth, for B raises the front leaf, which includes half of the warp, and sinks all the rest, while A exactly reverses the operation. The spot-treddles, on the left-hand, work the row contained in the first six spot-leaves, and those upon the right-hand the row contained in the second six. In working spots, one thread, or shot of spotting-woof, and two of plain, are successively inserted by means of two separate shuttles.

Diffimilar spots are those whose sides are quite different from each other. The draught only of these is represented by *fig. 10*. The cording depends entirely upon the figure, and may be supplied by the following simple rule: Having ruled the lines which represent the heddles, and crossed them by those representing the treddles, squares will be formed similar to those upon design-paper. The pattern being drawn upon design-paper, let the lines denoting the heddles represent the lines of the design, from top to bottom of the paper, and the treddle-lines the cross-lines. Place a raising-dot for every square which is coloured on the design, and the plan of cording will be correct. It is necessary, however, to remark, that when more than one square is included between the same parallel-lines, from top to bottom of the design, it is needless to transfer it more than once to the cording plan, for the treddle, being once marked, will repeat the operation as often as it is pressed, and, therefore, more than one treddle, for the same operation, would only load the loom with useless and cumbrous machinery. The plain leaves and additional leaves, for placing one row in the bosom of another, are quite the same in spots, whether similar or dissimilar. There is, indeed, a spot called a paper-spot, where all the warp is upon spot-leaves, except the intervals, and every second thread of woof is then coarse. It is undoubtedly superior in effect to the common spot; but, as it requires nearly twice the mounting, it is very expensive, and, therefore, little used. Some very beautiful specimens of it are occasionally imported from India.

MISCELLANY.
DRAUGHT AND CORDING OF LOOMS.

Fig. 1.
5 Leaf Tweel

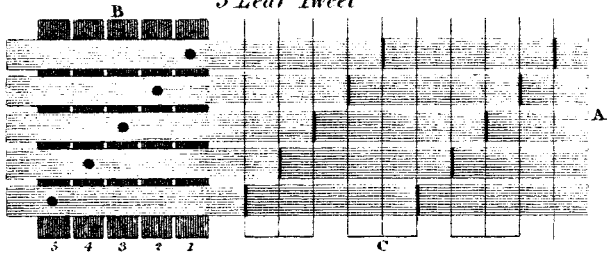


Fig. 2.
Broken Tweel

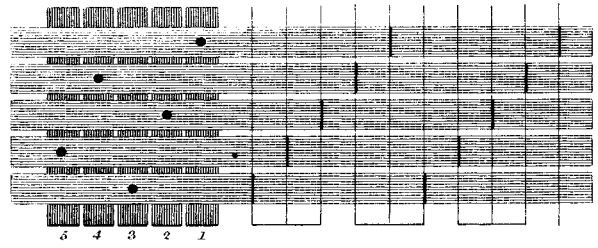


Fig. 3.
8 Leaf Tweel

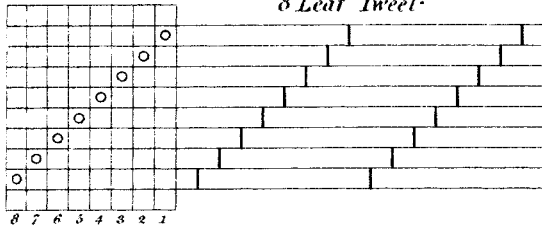


Fig. 4.
Broken Tweel

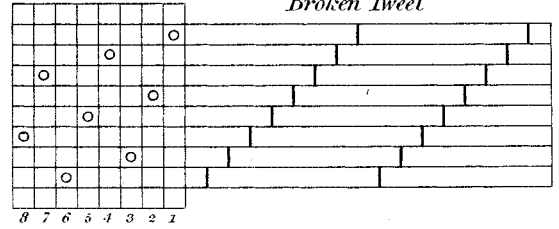


Fig. 5.
Striped Dimity

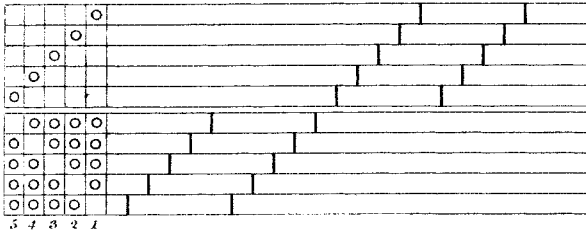


Fig. 6.
Dornock

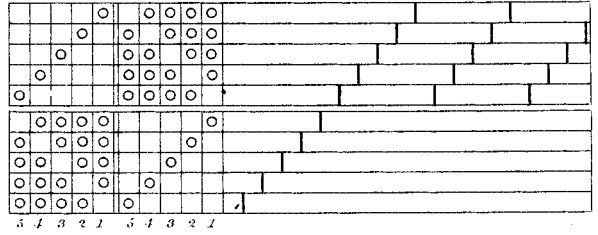


Fig. 7.
Fancy Dimity

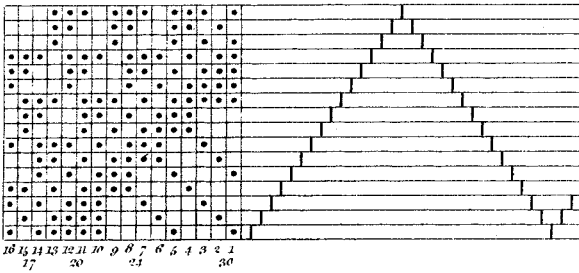


Fig. 8.
Diaper

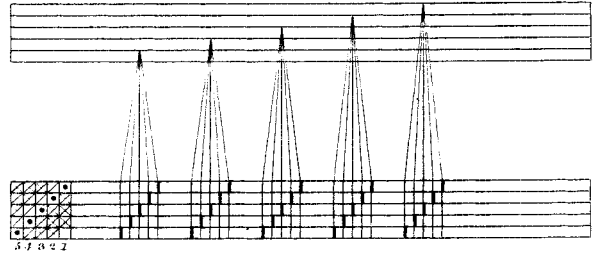


Fig. 9.
Similar Spot

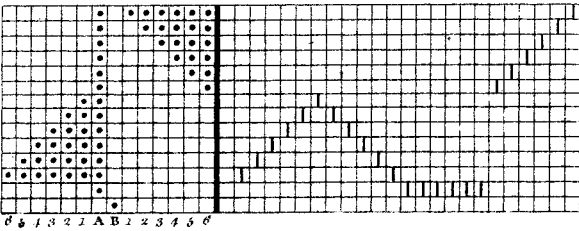


Fig. 10.
Dissimilar Spot

