WEAVING.—No. IX.

SHEDDING.

As the principles upon which twills, satins, &c., are formed have been shown, it now remains to describe the methods adopted by the weaver in arranging his loom for weaving them. We confined our attention to the uses that four leaves of headings only could be applied to, in order to avoid the complication which a greater number would necessarily cause in the figures. In the present case we shall adopt the same course, for it is only by limiting the number sets of the working parts that we are enabled to avoid complication and apparent confusion in our diagrams.

In Fig. 41, on page 461 of our last volume, was shown a common hand loom mounted with four headings, the manner in which these headings were connected to the loom being represented. Fig. 68, subjoined, represents the four headings as seen from the front of the loom, but all the other parts of the latter are omitted. As before described, the headings H H are each connected to a separate crosser or tumbler C C, and thence by the long cords to the crossing one leg over the other. The weaver, therefore, adopts some other arrangement, to devise which he constructs a plan which will not only represent the draughting or connecting of the warp threads through the headings, but show also the coloring or the attachment of the treadles to the headings.

He does this in a very simple and offical way, and in the present instance, Fig. 70 shows the draught and tie-up, as it is called, for weaving the twill, Fig. 69. It is simply a rough plan of the headings and the treadles, in which the single lines H H represent the four headings, and the lines T T represent the treadles. Near H four numbers, 1, 2, 3, 4, are placed in a diagonal position. These numbers represent the first four warp threads (exclusive of the selvage), and show the order in which they are entered. At a b we have added a few lines, representing an extension of the plan, and a portion of the warp threads, in order to show that the diagonal position of the numbers, placed by the weaver, corresponds to them; but it is not necessary for the weaver to place the lines a b, as the four figures are quite sufficient in this case, and they represent the order in which the warp threads are entered. On the lines T will be seen the figures 2, 4, 3, 1. These numbers represent the order in which the weaver can step his feet upon the treadles in the most convenient and rapid manner. Thus he treads the right foot first on the right outside treadle. This is, therefore, marked No. 1. The next treadle he can best use is the outside left one, and upon this he places his left foot. Consequently this is No. 2 treadle in the order of treading; and so on with Nos. 3 and 4, as shown on the plan, the odd numbers representing the right foot, and the even numbers the left.

Now, in Fig. 69 the first thread, or series of threads, are those in No. 4 headle; consequently the weaver puts a mark upon his plan at the intersection of No. 1 treadle with No. 4 headle. The next is No. 3 thread to be raised; therefore he marks the intersection No. 3 with No. 3 headle, and these marks represent the tie-up or connections to be made. In like manner No. 2 thread or headle is attached to No. 3 treadle, and No. 1 to No. 4 treadle. At first sight the order of the intersections gives little appearance of any consecutive arrangement, but it will be admitted that the arrangement
and the plan are all that can be desired for the purpose. Any number of heads can be shown in this way, but more of them than can be attached to the tendrels, according to the pattern to be woven.

It should be here mentioned that there are some cases which exact from the weaver no little amount of ingenuity for arranging the tying up. If there are two tendrels, instead of one, it is evident that with one foot he must work two tendrels, and with the other he must work the one only. In doing this he slides upon the next tendrel, say, from 4 to 5, whilst the other foot is moving to No. 1. This process is continued by avoiding the tendrels, making the odd number even, for by so doing the five heads are worked twice over by working upon the tendrel that the first head has been upon. This increases the number of tendrel.

But there are cases where the weaver can diminish the number of tendrels, i.e., where the same head or heads are repeated in the compass of one design. These are matters that, although they may not exactly come within the limit of our note, could not be omitted, for by it will be seen that in this compass of M M are connected to the heads in the same way as those in Fig. 65, and they raise the heads exactly in the same or other different places, that the remaining heads, which are not attached to the long march, or counterpart, are all attached to the short march, and then the effect is that by pressing upon any of the tendrels of the heads, the shorter end is raised and the remainder sink. The connection of the tendrel T and the tendrel T in the long marches are shown thick lines, and the cords to the short marches with thin lines, and it will be seen that each of the tendrels is connected with all of the heads, but in different arrangement.

The dotted lines a and b show the extent of the raising and falling of the two front heads and the back heads which would be caused by pressing upon one of the ends, right-hand tendrel. Under each of the heads is attached a strong lath d, which has the heads are of extra length and require strengthening.

The drafting and tie-up of Fig. 71 is represented in Fig. 74, and the design is a two-thred thrust, as shown in Fig. 73, and as it would appear when woven. Fig. 72 shows the connection of the tendrels with the long marches by the diagonal marks as before described, but there is no necessity for them. The number of tendrels that can be conveniently used in a loom is very limited, and rarely exceeds eight. The weaver, therefore, dispenses with them whenever it is possible to do so. This is generally effected by means of small machines which are worked by either one or two tendrels. At the same time, the machinery is seldom completely used for that purpose. But before we enter upon the subject of the machinery here there is one machine which must be described, and that is forming a connecting link between the systems we have already described, and the use of those machines which are complete in themselves.

The machine which allude to is a shedding motion with the action similar to Fig. 78, viz., a rising and falling shed with a stationary bottom, and is represented in Fig. 84, where it is shown that the shed is connected to the heads, and that the heads are raised and lowered by the action of the loom. Each head is connected to a separate coth a, in such a manner that when the head is raised downwards it is raised by the action of the shed. After the head travels over the slot board a, when it is raised, it is connected to a separate coth b, in such a manner that when the head is raised downwards it is raised by the action of the shed. After the head travels over the slot board b, when it is raised, it is connected to a separate coth c. This is generally effected by means of small machines which are worked by either one or two tendrels. At the same time, the machinery is seldom completely used for that purpose. But before we enter upon the subject of the machinery here there is one machine which must be described, and that is forming a connecting link between the systems we have already described, and the use of those machines which are complete in themselves.