WEAVING.—No. XII.

The third class of weaving, into which we divided the present part of the subject, consists in applying two separate systems of harness in the loom in such a manner that after the warp has been passed through one set it is passed through the second set, each set of harness having an especial duty to perform, although they both operate upon the same warp threads.
The first harness through which the warp passes is for the purpose of forming the pattern, as it were, on a large scale, and the purpose of the second harness it to break up this pattern into detail and to connect the necessary minute intersections. In other words, in the first instance the outline of the pattern is formed, and the next case that outline is woven in detail, so that each thread is intersected, or woven together, as in twill or satin, of any desired description.

At A and B, Fig. 119, the process mentioned will be at once apparent. It will be seen that at A the figure woven consists of more than five threads in both warp and weft between each intersection, and at B, where the figure runs nearly across the cloth without any intersection of the weft threads whatever. Still the outline of the pattern is formed, and it remains to form that outline of cloth of proper consistency, by giving the threads the requisite number of intersections for that purpose.

This is effected by passing the weft threads, in groups of five, in this instance, through the eyes of the healds at C, and thence through the healds at D, where they are distributed, each thread having a separate eye. The eyes in these healds are made of considerable length, as shown in section, Fig. 118, where it will be evident that the heald C may be raised and lifted the warp threads with it, as shown by the dotted line A, without being obstructed by the eyes in the healds D. Consequently, if the leashes A are worked separately, and without working the healds D, they would raise the threads in groups and form the cloth, as at A, Fig. 119.

Now we will suppose, on the other hand, that the healds C remain stationary, as in Fig. 113, it will then be seen that any of the healds D being raised will also raise the warp threads which pass through it. This is shown at A, Fig. 114, where the heald being raised has also raised one warp thread, although it is held down by the eye at s of the leach C, one thread being raised and four stationary. Again, if the leach C be raised, as at w, it will raise the warp threads quite independently of the healds D, but it will be observed at w, Fig. 116, the heald s being depressed has carried with it the corresponding warp thread, one thread being sunk and four raised of the five threads in the leach.

Thus it is clear that the healds C may be raised at pleasure, and form any figure that may be desired, as at A, Fig. 119, but by applying the ground harness, i.e., that which works the ground or detail intersections of the cloth, the effect produced will be as shown at B in the same figure. In this case the ground is a single thread five-leaf twill, and is worked by a raising and sinking harness, as shown in Fig. 114. The twill is reversed, as shown in the light and dark parts at B, and by exposing, more or less, the warp or weft, thereby the design is rendered distinct.

This system of weaving is known as damask weaving, and was originally, it is believed, brought from Damascus, hence its name. It is said to have been introduced into England in the year 1697, during the persecutions by the Duke of Alva the Dutch and Flemish weavers, who fled from their homes in consequence, and established that branch of weaving in various countries.

The loom in which damask weaving was effected is known as the draw loom, and, although there is perhaps no record known of its introduction into England, it is very probable that it was at the period above mentioned.

Fig. 115, on the preceding page, is a diagram of a draw loom, the same as shown in Fig. 115, and the letters in each refer to the same parts.

The leashes C pass through the holes in the comb board, as shown, for the purpose of keeping them in position, as before explained. They are then carried upwards, and through the bottom board of the pulley box E, and after passing over the pulleys are collected together at the staple L. From the pulley box to the staple the cords, shown at T, are called the tail of the harness. They are attached to another set of cords placed vertically at S. These cords form the "simple," and it is upon them that the pattern is arranged.

It will be observed that there are two strong cords placed vertically which form an attachment and a guide to a number of loops marked 1, 2, 3, 4, by drawing or pulling any of these loops it draws with it the corresponding simple cords, and these being grasped by the hand and pulled or drawn downwards, they raise the corresponding leashes C, and thus the shed is opened in the warp so far as this part of the harness is concerned.