WEAVING.—No. VII.

HAND-LOOM WEAVING.—(Continued).

In plain weaving it has been shown that the threads of the warp and weft intersect each other alternately, but in figured weaving the intersections are varied according to the pattern, for it is by this means that the figure is produced. Still, in plain weaving, the first step towards figured or pattern weaving is made by varying the thickness of the threads both in the warp and the weft, as may be observed in the borders of some cambric handkerchiefs. Different coloured warp and weft threads may also be used, so as to form stripes, checks, or plaids, or materials of different kinds, such as silk and wool, may also be used with more or less effect.

But whatever the difference of the threads may be, the actual mode of weaving them is simply plain, or tabby weaving. If various kinds of threads are required for the warp, they are arranged in the process of warping, and they are afterwards entered or placed in the loom accordingly. But the various kinds of weft threads are inserted by shuttles, each description of thread having a separate shuttle.

Fig. 49 represents a piece of cloth, or handkerchief,
which has two thicknesses of warp and weft. The 

warp W has been arranged, as before described, on the 

warping mill; but the weft threads have been inserted 

in two separate shuttles, and the thick and 

thin weft threads may be traced as they have been 

carried from side to side of the cloth.

In this case the shuttle is always kept in a vertical 

position, and the thread is inserted into the 

shuttle so that it may not be allowed to 

fall. The shuttle is then placed in the 

shutter box as shown in Fig. 47, and the lever 

is operated by means of the handle as shown.

These pins, when the box is lowered, rest upon 

the hooks a, Fig. 47, and prevent the box from 

being lowered to its full extent. But by drawing 

the hooks aside, the box can then descend to 

the full extent. The hooks are drawn aside by means of 

the cords f, which are connected to a peg p, 

Fig. 48, placed in the middle of the batten, and 

shown in sectional plan, Fig. 48. When the 

peg is pushed inwards, as shown by the dotted lines, 

it draws the cord f around the small pulleys 

as shown, and, consequently, pulls back the hooks.

It will be noticed that each hook works on its 

pulley as shown at p, and the pick is connected 

by a cord at r. The hooks, after they have 

been drawn backwards, recover their position by 

means of a small spring shown at a, Fig. 47.

The boxes are suspended from the levers f, f, 

the opposite ends of which are connected with the lever 

s, Figs. 49 and 50. The boxes being heavier than 

the lever s, their tendency is to drop and lift the 

lever. The lever counteracts this by holding the 

lever down when working the batten with his left 

hand, or he sometimes fixes a small catch at s, 

which can be easily thrown in and out of contact 

with the lever without moving the hand off the 

batten.

In working the loom the boxes are raised, 

as shown in the Figs. 43 to 47, and the lever s is pressed 

or held down. Consequently the bottom shuttle 

box is placed opposite the picker on both sides of 

the loom. If the weaver releases the catch s, 

or his hand off the lever s, the boxes fall 

and rest upon the hooks a, Figs. 46 and 47, by means 
of the pins e, e, and the middle shuttle boxes are 

then lowered to the level of the race box.

The drum makes for two shuttles only; 

although by an ingenious contrivance three 

shuttles can be used, or several more, by an 

extension of the principle.

It will be advisable to describe a three-shuttle box, for it 

comprises the principles of both the others.

Fig. 41 is fitted with a two- 

shuttle box, or rather a pair of such boxes, for 

there is one at each side of the loom, as shown 

a, a, and Figs. 40 to 42 represent in detail a pair of 

three-shuttle drop-boxes.

Fig. 42 shows a front view of a batten fitted with 

boxes, and Fig. 43 gives a back view of some, 

Fig. 44 is an elevation of a box on a large scale, 

Fig. 45 a plan, and Fig. 46 is section of it, at 

the line B B. The same letters refer to the same parts 

in all the figures.

The drop-box consists simply of a small board 

upon which the shuttle or shuttles, according 

to the number of shuttles, and as these shuttles 

are lowered to the level of the shuttle race, or 

board upon which they lie, so as the shuttle upon 

that shelf brought in line with the picker, and 

may be driven to the corresponding box on the opposite 

side of the loom.

In the various figures, a a a represent the drop- 

box, the shelves upon which are more clearly 

shown in section, Fig. 43. The shelves 

are inclined in the same way as the shuttle race, 

but when the batten is pushed backwards for the 

throwing of the shuttle they become less inclined, 

although sufficiency so as to keep the shuttle in 

its proper course. The far end of each box is 

contracted, as shown at b, Fig. 45, which is to 

prevent the shuttle from going beyond its bounds.

Shuttles are shown upon the shelves at c, Fig. 46, 

where the batten is in line with the 

picker d. There are two pickers only, as in 

the ordinary fly loom, but they slide horizontally, as 

shown at d, Fig. 46, upon the spindles e, e, 

not vertically as in the single shuttle fly. 

This arrangement is to allow the picker to slide over any 

of the shuttles without injuring it.

The pickers are driven by means of a stick and 
cords f, as before described in the fly shuttle, but 
in this case the additional cord g, Fig. 46, which 
is elastic, and is for the purpose of passing the 
picker through the box after the shuttle has been 

thrown, and would prevent the box from being raised or lowered when required. 

The picker is provided with a "nib" to slide into a 

groove in the shuttle box, as in the ordinary 

fly, and as shown in Fig. 46. In Fig. 44 the dotted 

delines D D show the position of the picker after it 

has thrown the shuttle, when the 

elastic cord h withdraws it from the box.

The box is made to slide on two small bolts 

shown at f, which represent the back of the 

box. In the same figure the pins m m are 

shown, also at m, Fig. 46, fixed in the back of the box.