

## WEAVING.—No. XXIII.

PILE WEAVING—(continued).

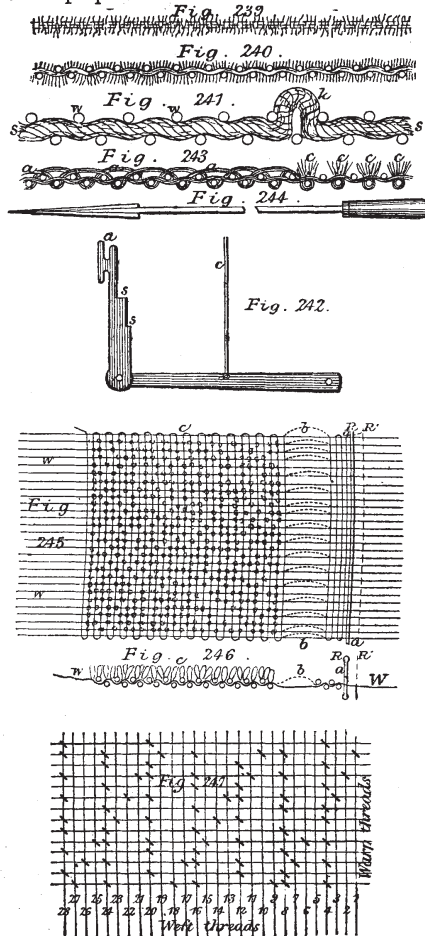
BOTH cut and terry velvets are now woven in power looms, and the various methods adopted for the purpose may be best understood by the following diagrams.

Fig. 232 (see *ante* page 378) shows one the first attempts at weaving velvet ribbons by power, patented by Mr. Thompson, of Coventry, in 1842, but only one ribbon is represented, that being sufficient for the purpose. In this instance two wires or "tags" are used. They are fixed into side levers, and are regulated and moved to follow the motion of the cloth. In the diagram, W is the warp, C the cloth, and *a* and *b* the velvet wires. The wire *b* has been withdrawn, and ad-

vanced to the front of the wire *a*, ready to be inserted again into the shed. The wire *a* is then withdrawn, and moved in a corresponding manner, as shown by the dotted lines *a'*. Thus the wires are woven into the cloth and withdrawn alternately.

But this plan was found defective from the circumstances before alluded to, namely, that two wires are not sufficient for weaving terry velvet carpets. Many attempts were, therefore, made to use several wires, and at last with success. Fig. 233 shows the plan patented by Mr. Collier, of Halifax. In the diagram, *W* and *C* represent the warp and cloth into which a number of wires are placed. The outside wire has been withdrawn from the cloth and moved to the front to be again used, as may be traced by the dotted lines and arrows at *n* and *n'*.

This motion really follows the action of the weaver in the process when the hand loom is used for the purpose.



In 1855, Mr. Weild, of Manchester, took out a patent for an ingenious and effective plan for inserting and withdrawing the wires, which is somewhat similar in its action to the circular shuttle boxes used in power looms. Mr. Weild places a cylinder at the side of the loom, upon the surface of which several grooves are cut for the reception of the wires. Now the distance between any two of the grooves corresponds to the distance between the first and the last wire in the cloth, consequently by means of catches and a slide the wires are inserted and withdrawn at each intermittent motion of the cylinder. This will be understood better by referring to diagram, Fig. 234, which is a plan, and Fig. 234A an end section of the cylinder. It will be seen the cylinder is enclosed in a tube, the upper surface *a* of which is left open, so that the wires can drop into the grooves, and then be carried round to the front of the cloth as required. A carrier or slide *a* provided with catches, &c., pushes and draws the wires at the appointed times.

Fig. 236 shows one of the wires in two positions *a* and *b*. They have, as in Mr. Collier's loom, a flat wedge-shaped head at one end for the purpose of holding it in position and for the catches to take hold of during the various movements.

In both cases, Figs. 233 and 234, the wires are for weaving terry velvet, but wires are used with a thin knife-edge fixed upon the end as shown in dotted lines at *m*, Fig. 236, when the velvet is intended to be cut. On withdrawing wires of this kind the knife cuts the loop.

Another class of velvet and plush weaving very often used is to weave two pieces of cloth one above the other, and the pile threads passing from one piece to the other connect them together. If these threads are cut, then two pieces of cloth with velvet surfaces will be produced. Fig. 236 shows two warps *w* and *w'*, with the pile threads *p* passing from one to the other.

At *K*, there is a thin knife blade which is made to move rapidly between two beams *a* and *a'*, and as the cloth is woven and advances the pile threads are cut and the two separate pieces are wound upon the beams. Mr. Lister, of Bradford, has done much to bring this kind of loom to its present perfection. Instead of a knife or blade being used, one patentee, Mr. Wattine (1873), has claimed the use of a platinum wire, which being heated by electricity, has the effect of burning the pieces asunder.

In double velvet weaving there has been one great difficulty to contend against, namely, to keep the two pieces of cloth at a constant distance apart.

To do this an exact supply of pile thread, and of one given tension, must be supplied at each shed of pile threads, otherwise any additional strains would draw the two pieces nearer together, and the pile would be irregular. Sometimes wires are inserted at short intervals which act as distance pieces, but their use is evidently not desirable.

The cutting knives are of various kinds, and are sharpened on stones as they pass over the sides of the loom in their rapid movement. A knife similar to the serrated blades of a mowing machine has been patented by Messrs. Shaw, Ditchfield, and Knowles, the long teeth of which enter between the two pieces, whilst the lateral movement of the top blade cuts the pile threads. See Fig. 237, which shows the movable blade *d* upon the fixed blade *a*.

A modification of pile weaving is made by using chenille weft. Chenille is a fringed thread, and when used as weft the filaments of fringe protrude through the interstices of the cloth, and produce a fur surface on the cloth. Fig. 238 shows a simple method of making chenille, which is weaving a piece of cloth with a small number of warp threads and then cutting into strips, as at *c*. The warp threads *w*, three in each case shown, bind the weft threads *s* together, and when twisted form a cord, as at Fig. 239, which when woven in the cloth appears as