WEAVING.—No. V.
HAND-LOOM WEAVING.

In power looms for weaving cotton warp the operations of warping and dressing are performed by much more efficient means, and contrivances are applied for the purpose of stopping the machine in the event of the sticking or breaking of the threads. These machines will be hereafter referred to in connection with power-loom weaving.

When the warp is placed on the beam it is ready for the loom, and it is then drawn or entered, each thread into its proper place in the loom, which will be better shown when describing the loom itself. When a warp has been woven, a short length of it is usually left in the loom, and the new warp is attached to it by twisting together the corresponding threads of the old and new warps. This process of “twisting in” is done with far greater rapidity than entering, and it is through the threads of the warp being kept in their consecutive order by means of the cross or lease, as before mentioned, that enables the weaver to pass from thread to thread with certainty and ease. When all the threads have been connected or twisted together, which is effected by the use of a little paste or gum applied between thumb and finger, they are then drawn carefully through the head and reed of the loom, the strength of the thread not being weakened by the presence of the twisting; for the purpose of this operation is merely to save the greater amount of labour which entering them requires.

Fig. 19 represents a common hand loom, such as is adapted for plain weaving. It consists of four wooden posts framed together at the top by two long and two cross pieces. The long pieces C C are called the capit of the loom. Between the two pairs of posts, forming the ends of the loom, are placed two cylindrical beams; the beam A being the warp beam, upon which the warp W is wound, and B the cloth beam, upon which the cloth is wound as it is woven.

19 and 20. The headlets are composed of a number of threads stretched between two laths, and they have loops made in the middle of them, or an eye called a nail is threaded upon them instead. These loops or eyes are for the purpose of passing the warp threads through. There are two headlets shown, one of which receives every alternate thread of the warp, and the other receives the remainder. Consequently, by their means, if either of them be raised, it will also raise the warp threads which have been threaded through the loops or nails of it. Thus an opening or shed, as it is usually called, is made for the passage of the shuttle.

The arrangement of the warp threads, and the various parts of the loom which operate upon them, may be best understood by referring to Fig. 21, which is a diagram showing each warp thread separately. Fig. 20 is a section of Fig. 21, and Fig. 19 represents the same parts as they are connected to the frame of the loom.

Headlets are made of various forms, materials, and strength, according to the particular fabric or purpose for which they are required. Fig. 22 represents two common modes of forming them, one with a loop, and the other represents an ordinary eye or nail. For wearing silk warps the nails are usually made of glass, but for cotton and other materials, steel or brass are generally used. The headlets, whether
formed with loops or with metal nails, are made by means of very ingenious machines, known as heald knitting or making machines, to which we may hereafter refer.

The upper laths of each heald are connected to cords which pass over pulleys p p, Fig. 21, and thus they balance each other. The lower laths in like manner are connected with the treadles, as shown at T, Figs. 19 and 21; consequently by using the treadles the healds are raised and sunk alternately.

The warp threads, after they have been threaded through the healds are then passed through the reed R, Fig. 21, which is composed of narrow strips of metal or flattened wire. They were formerly made of strips of reed—hence the name—which is now applied to the metallic substitute.

Fig. 21 represents the old method of cleaving the reed into strips by pressing short lengths upon a taper spindle, into which radiating blades were fixed. The strips were then passed through a gauge plane, as shown at 6. The reed or comb (Figs. 24, 25, 26), is formed by placing a number of the strips, whether of reed or metal, between half-round laths, and they are bound together by a waxed thread passing between and round each strip and at both ends, as shown enlarged at S and T. The number of the strips vary according to the different degrees of fineness of the fabric to be woven, varying from a few dents per inch to as many as 120 and upwards. They are constructed by machines well adapted for the purpose, and the regularity of gauge, upon which the evenness of the cloth depends, is therefore insured.