

Weaving, n. (*Manuf.*) The act, art, or operation of producing cloth by the combination of flexible fibres, performed upon a frame called a *loom*, the invention of which is ascribed to the Egyptians. Among all barbarous nations, *W.* consists of warping and crossing grasses, and such simple materials as are most easily attainable, and is purely darning. The long threads, running from end to end of the piece, are called the *warp*; the cross ones, interlacing from side to side, the *weft*. In the method of *W.* by darning, every alternate thread of the warp must be lifted by itself to put in the weft-shot, and that process is therefore very tedious; but when a method is employed for lifting up a certain portion of the warp at once, which is called *shedding the web*, to receive the weft-shot, this effects a great saving of time, and is *W.* in its second stage. *W.* in this state has existed from time immemorial among the Egyptians, Hindoos, Chinese, and others. *Plain W.*, where the weft-threads pass alternately over and under those of the warp, is performed at a loom, of which the essential parts are: 1st, an arrangement for stretching the warp; 2d, a contrivance for raising every alternate thread, or half the threads of the warp, and depressing the other half, so as to open a space or shed for the shuttle which carries the weft; 3d, a contrivance for striking each weft-thread close up to the one previously thrown. In *W.* with the common loom, the warp is wound upon a cylindrical beam or roller. From this the thread passes through a harness composed of movable parts, called the *heddles*, of which there are two or more, consisting of a series of vertical strings, connected to frames, and having loops through which the warp passes. Each of these heddles receives its portion of the alternate threads of the warp, so that when they are moved reciprocally up and down, the relative position of the alternate threads of the warp is reversed. Each time that the warp is opened by the separating of its alternate threads, a shuttle containing the woof is thrown across it, and the thread of woof is immediately driven into its place by a frame called a *lay*, furnished with thin reeds or wires, placed among the warp like the teeth of a comb. About the latter portion of the 18th century, a loom to go by machinery was eagerly sought after, and was supposed to be an impossibility. Several were constructed and failed, and the cause of their failure, although apparently a trifling one, was, in reality, very important in *W.* by power. It was the want of a means to prevent the breakage of the yarn by the accidental stoppage of the shuttle in the shed. A Mr. Miller, however, at length invented a means, called a *protector*, by which this difficulty is obviated; and the power-loom is now enabled to perform all the motions of *W.* uninterrupted by accidents of this sort. *Figure-weaving* requires considerable preparation in mounting the loom, and differs from plain-weaving in the number and arrangement of the heddles, and the method of moving them. As the number of heddles was in general too great to be moved by the feet of the weaver, an apparatus called the *draw-loom* was in general use until the introduction of the *Jacquard Loom*, *q. v.* In 1857, Mr. N. B. Carney, of New York, patented a method of weaving fabrics within, and upon, a circular frame or loom, the shuttle being carried in a circle round the frame with a continuous movement, the warps, shuttles, and filling being placed at the top of the loom, and a reciprocating movement being continuously given to heddles lying horizontally about the loom, so as to produce the shed properly in front of the shuttle. In the same year,

Mr. E. B. Bigelow, of Boston, patented a method of weaving pile fabrics double, by means of transverse intersecting pile wires woven between the two fabrics so as to keep them properly apart, with movement at the same time of two shuttles, and an arrangement connecting each shuttle with the shipper, or disconnecting lever of the loom, so that, when the filling falls in either shuttle, the loom is thrown out of gear. Other American inventions in connection with the improvement of the power-loom have been very numerous, but comparatively few changes of a radical character have been introduced.