ters *aaaa.* In the smaller looms, used for cotton or worst­ed weaving, a single cord passing over a roller is found to be sufficient ; but in weaving broad cloths, which are set in the loom twelve quarters in width, to allow for shrinking in the fulling and scouring, the length and weight of the gearing requires double support.

The cranks, by which the lay or batten is put in motion, as shewn in figure 18, are marked *bbbb.* The reader will observe that it is only their lower portion that can be seen, the upper part being concealed by the breast-beam.

The shuttle in the loom here represented is thrown by a single whip-lever in the centre of the loom, moving alter­nately to the right and left, instead of by two levers, one placed at each end of the loom. The sudden jerk neces­sary for the sharp motion of this picking lever, which, be it observed, must imitate the sharp motion of the weaver’s right hand, is produced by the rollers *d d* affixed to the shaft D, which, at every half turn of the said shaft, strike down the rollers *e e* alternately, and draw the whip-lever *c* to­wards them by shortening the cords *f f* The picking cord *g g* being thus alternately drawn to the right and the left, moves the shuttle along the shuttle-race *h h,* in a manner with which the reader must be familiar.

The mode of throwing the loom out of gear is that which must be familiar to every one who has seen machinery of any kind worked by a shaft and band, *l m* is a split drum, *l* being connected with the shaft, and *m* being unconnected therewith. It follows, that when the band is brought over the drum *l*, the shaft is necessarily set in motion, whereas the instant it is cast off upon the loose drum *m,* the ma­chinery is stopped. The band is cast off and the loom thrown out of gear by means of the lever *h,* which, when pushed to the right, moves the forked lever which holds the band *i* in a lateral direction sufficiently to effect the purpose.

Figure 16 is an end view of the loom; X being the cloth-beam, Y the roller, and Z the batten, the motion of which is described by figure 18.

After the description already given of the motions ne­cessary to the weaving of a piece of cloth, very little fur­ther explanation is necessary to enable the reader to under­stand the operations of the power-loom, and the manner in which motion is communicated, from its first source, to the heddles, the shuttle, the batten, and the warp, all of which correspond with unerring regularity ; conducting the work

with a degree of precision which it would be wrong to say the hand cannot attain, but which certainly can only be achieved by the skilful few.

The motion of the heddles is produced by two eccen­tric wheels or tappets, acting upon two levers or treadles, furnished with friction- rollers. While the short radius of one tappet is on one treadle, so as to permit the elevation of the corresponding heddle, the long radius of the other presses down the other treadle. Fig. 17 exhibits one of the tappet-wheels, the short radius pressing upon its treadle, the dotted lines showing its position on its