



TESTING MACHINE AT PARIS EXHIBITION. FIG. 1.

TESTING MACHINES AT THE PARIS EXHIBITION.

Messrs Chauvin & Marin-Darbel, of Paris, have somewhat numerous exhibits of their manufacture at the Exhibition, among the rest some testing machines of a type which they brought out in 1876, and which we illustrate by the engravings on the present and opposite pages, for which we are indebted to *Engineering*.

Fig. 1 represents a 60-ton machine for tension, compression and bending, shown in the engraving as arranged for bending stress. Fig. 2 shows the apparatus used for registering strains in the same machine when it is used for extension or compression. Fig. 3 is a machine for testing wire, and Fig. 4 a machine for testing paper, woven fabrics, or threads. All these machines act on the same principle, which may easily be described by the help of Fig. 1. Attached to the entablature of the machine, which is supported by three cast iron columns and two smaller

ones of wrought iron, is a cast iron cover, slightly conical. Below this cover is a similarly shaped diaphragm, supported round the edge by a ring of India rubber so as to permit its motion up and down. The diaphragm fits up into the cover so that only a small space is left between the surfaces of the two. This space is filled up with water, all the air being carefully expelled from it. The lower portion of it is then put in communication with a bent tube filled with mercury, the outer end of which is open and stands above the level of the top of the machine, as shown attached to the left hand column in Fig. 1. It will be readily understood that under these conditions the separation of the diaphragm and the cover, that is to say, the pulling down of the former, is resisted by the atmospheric pressure from below. As the separation is effected the mercury passes from the tube into the space between the two surfaces, and the depression of the level of the mercury forms a measure of the amount of separation.