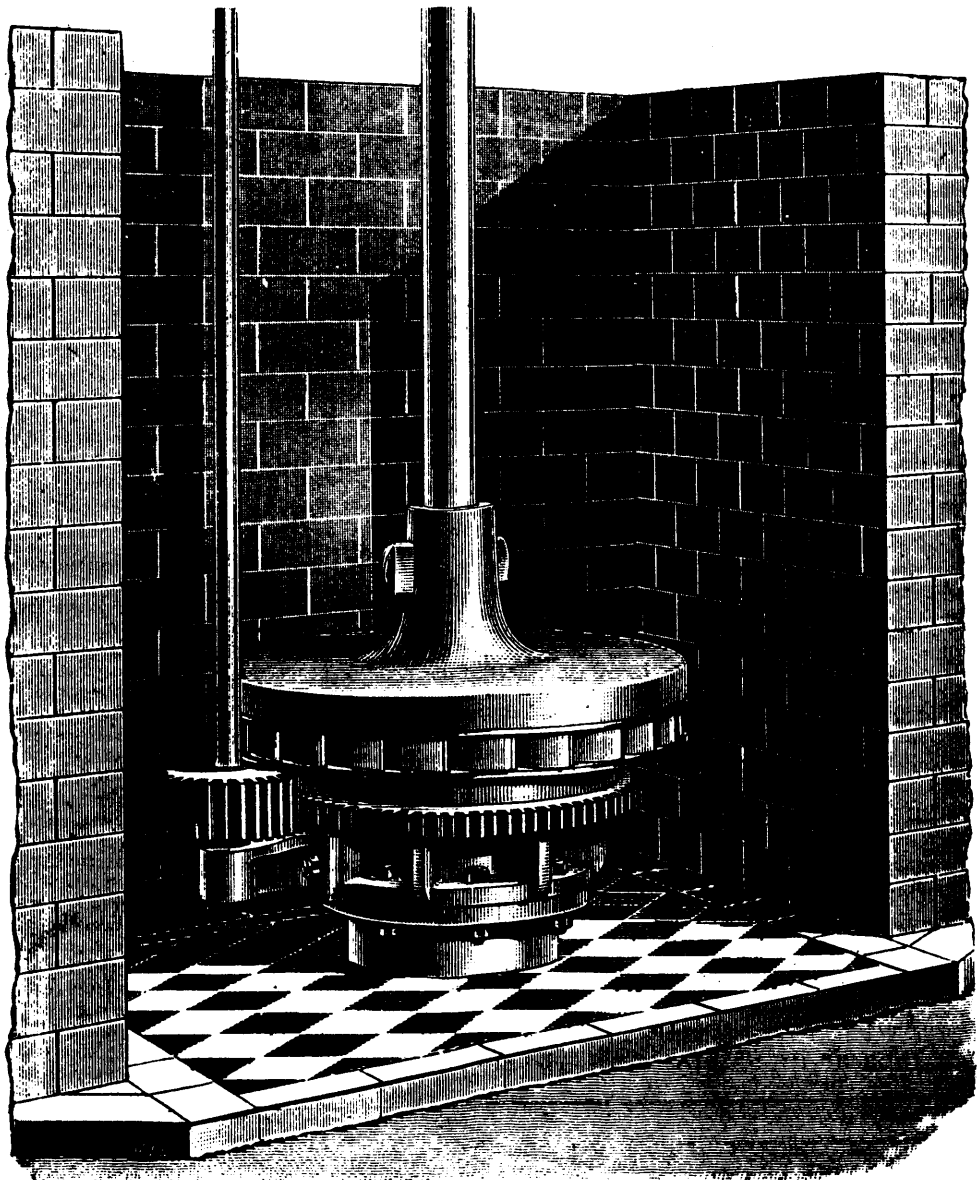


HIGH PRESSURE TURBINE.

This illustration is taken from the photograph of one of the best descriptions of these Patent Turbines. It is working from a clear head of 92 feet, or 40 lbs. per square inch, and producing 80 horse-power, while making 450 revolutions per

minute. The guides, buckets and sluice are made of the best gun-metal; and the Turbine runs with perfect freedom from vibration.



PORTABLE BRIDGES.

At the Paris Universal Exhibition of 1878, Mr. Alfred Cottrau, of Naples, the well-known Italian bridge constructor, exhibited models of a system of portable bridges, which attracted considerable attention, and for which a silver medal was awarded. Since that time Mr. Cottrau has introduced many modifications and improvements in his system, and in its latest development, it forms an important collection at the present Turin Exhibition, under the general title of Politetragonal bridges, and made by the Ironwork Construction Company, at their works in Castellamar (Stabia).

Whatever may be the span (within limits), the width and the load to be carried, bridges made upon this system, are built up of three elements, Figs. 1, 4, and 5 connected by means of

bolts and keys, and washers, as in Fig. 6 and 7. As examples of bridges constructed on this system, the elements, Figs. 1, 4, and 5, weigh respectively 220 lb., 103.5 lb., and 22 lb., all are therefore very easy of transport. The combination and erection of these bridges, even by unskilled labour, or by ordinary troops, is easy and rapid, but with properly trained men, a span of 65 feet, can be completed within an hour. It is true that there exist other and well-known systems of military bridges, the erection of which can be effected in even shorter time, but the special advantage which Mr. Cottrau claims, is that while portable bridges on existing systems are necessarily limited in their spans, his principle is applicable to relatively large openings, the weights of the component parts remaining always the same; moreover, the strength of the structure can be modified according to the load which has to be carried, with