But, on the other hand, this circular motion must be given anew to every particle of water as it enters the horizontal arm. This can be done only by the motion already in the arm, and at its expense. Thus there must be a velocity which cannot be overpassed even by an unloaded machine. But it is also plain, that by making the horizontal arm very capacious, the motion of the water from the axis to the jet may be made very slow, and much of this diminution of circular motion prevented. Accordingly, Euler has recommended a form by which this is done in the most eminent degree. His machine consists of a hollow conoidal ring, of which Fig. 12. is a section. The part AH *h a* is a sort of funnel basin, which receives the water from the spout F; not in the direction pointing towards the axis, but in the direction, and with the precise velocity, of its motion. This prevents any retardation by dragging forward the water. The water then passes down between the outer conoid AC *c a* and the inner conoid HG *g h* along spiral channels formed by partitions soldered to both conoids. The curves of these channels are determined by a theory which aims at the annihilation of all unnecessary and improper motions of the water, but which is too abstruse to find a place here. The water thus conducted arrives at the bottom CG, *c g*. On the outer circumference of this bottom are arranged a number of spouts (one for each channel), which are all directed one way in tangents to the circumference.

Adopting the common theory of the reaction of fluids, this should be a very powerful machine, and should raise $\frac{8}{9}$ths of the water expended. But if we admit the reaction to be equal to the force of the issuing fluid (and we do not see how this can be refused), the machine must be nearly twice as powerful. We therefore repeat our wonder, that it has not been brought into use. But it appears that no trial has been made even of a model; so that we have no experiments to encourage an engineer to repeat the trial.