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Improved Helical Turbine.

The several engravings (Figs. 1, 2 and 3), published herewith, represent a turbine water wheel, combining the helical curve with the Jonval wheel proper, in a neat, compact and portable form. It can be set in the place of any common water wheel with the same expense of foundation, fluming, gearing, etc. The inventor's experience for the last twelve years in building the Jonval turbine, including his experiments at the Fairmount Water works, Philadelphia, in 1859 and 1860, where he obtained a result of 6½ per cent over all other competitors, has enabled him to produce a turbine which, for simplicity of construction, durability and power cannot be equaled.

Fig. 2

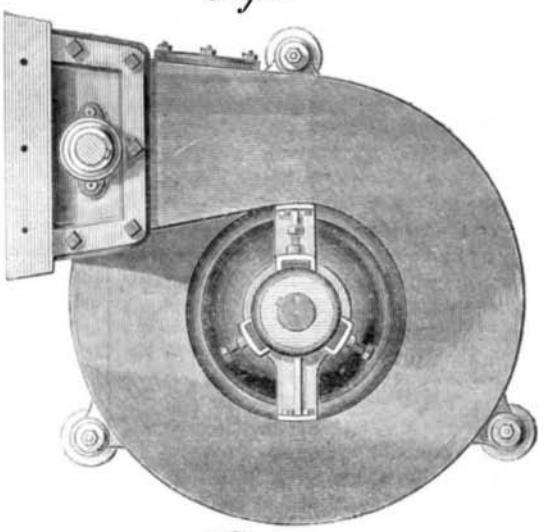
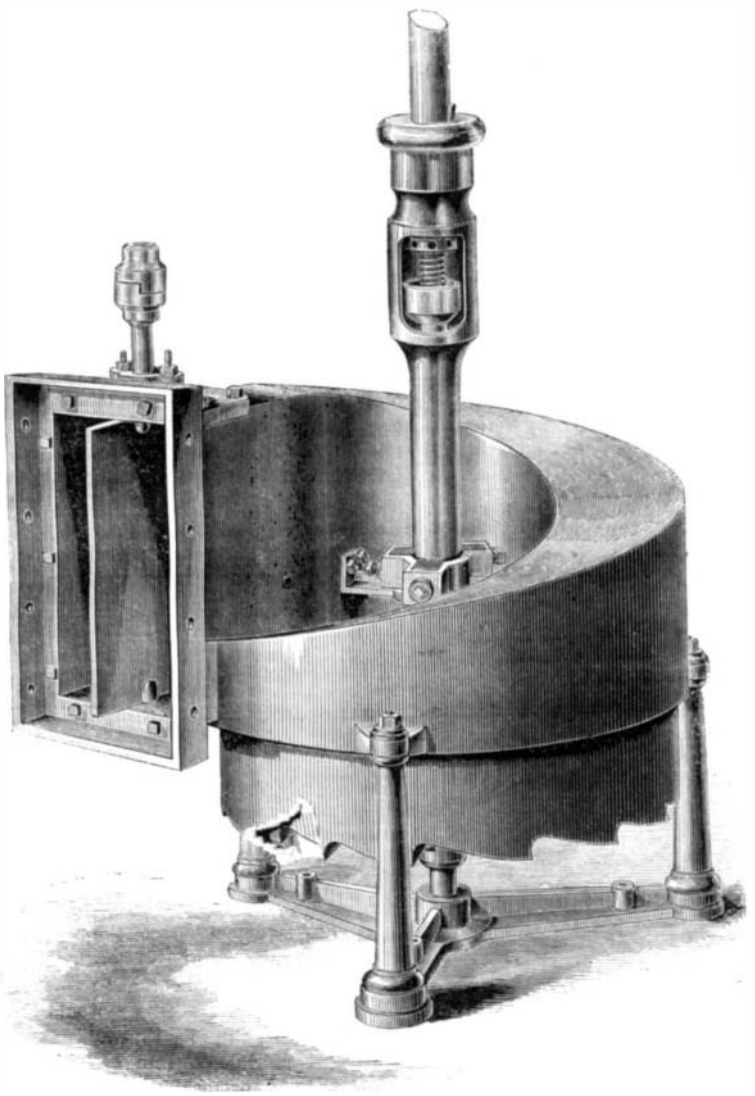


Fig. 3



STEVENSON'S HELICAL TURBINE.

Fig. 1 is a perspective view of the turbine complete. Fig. 2 is a plan or top view; and Fig. 3 is a view of the wheel and shaft.

The proportion of wheel, in the number of its buckets, form and size of its discharge openings, etc., are improvements which render it free from liability to clog up with anchor ice or any rubbish. The helix is so constructed that the velocity and force of the water acts upon all the buckets at once; the *vis viva* of the water is not lost by friction on the sides of the helix before acting on the wheel. The step is made of hardened steel and is of peculiar form; it is placed above the wheel, resting on a stationary spindle inside the hollow shaft which the wheel is keyed to, thus doing away with the large wooden step below the wheel, which causes a loss of power by friction. In the hollow shaft is an opening suitable for oiling and adjusting the step, and also for regulating the hight of the wheel to the helix by means of a screw and nut, so as to prevent loss of water from leakage. There can be no loss of power by the rubbing at the periphery of the wheel, caused by the lateral wear of the step, as in common scroll wheels after running a year or two. The power of the wheel can be perfectly regulated by the gate, and when machinery is thrown on and off, an ordinary governor will keep a uniform speed. These wheels are applicable to all mill powers, and can be furnished from twelve inches diameter up to seven or eight feet, in a reasonable time after the order is given. If properly put up and geared, 80 per cent of useful effect will be obtained; the experience of the last few years has fully warranted this assertion. For further information address J. E. Stevenson, Hydraulic Engineer, 200 Broadway, New York, upon whose improvements patents are now pending through the Scientific American Patent Agency.

On the occasion of the new year, the Emperor presented to the son of Prince Napoleon an automaton toy, representing a gardener with a barrow. The figure walks backwards and forwards, and turns its head in the most natural manner, at the same time wheeling before it whatever may be put in the barrow.