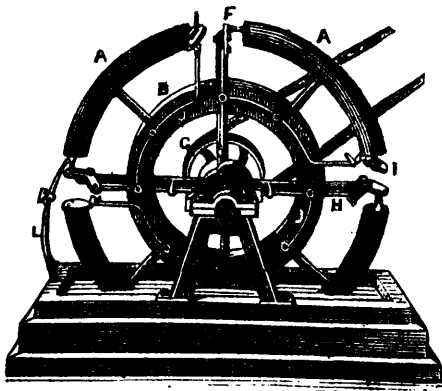


*Artistic Brickwork.—Fig. 4.—Detail of Third Story of the New Morse Building.—Scale  $\frac{1}{4}$  Inch to the Foot.*

#### A NOVEL ROTARY ENGINE.

We give herewith an illustration of a rotary engine of novel character, which the inventor, Mr. Lorenzo B. Lawrence, of Monticello, Cal., calls a rotary vacuum engine. It consists in an arrangement of curved tubes, A, which are open at both ends, and supported by a wheel, B, secured to a hollow shaft, and having tubular spokes, which project beyond the periphery of the wheel into the spaces between the curved tubes, A.

The hollow shaft is supported by plummer blocks, which rest upon the sides of a water tank, into which the curved tubes dip. One end of each curved tube is always left open; the opposite end is provided with a valve, I, which closes automatically as the open end touches the water. Opposite the open end of each curved tube there is a gas-burner, F, which is pivoted to one of the tubular arms of the wheel, B, and is moved by a cam, G, attached to the plummer block. This burner receives gas through the hollow shafts and arms of the wheel, B. The valves, I, are operated by the same cam through the levers, J.



**A NOVEL ROTARY ENGINE.**

The pivoted burners are arranged with reference to a continuously burning stationary gas jet L, so that the gas is let on as they come opposite the stationary jet, the latter serving to ignite the gas as it issues from the pivoted gas-burners.

As the mouth of the curved tube nears the water, the valve, I, is closed, and the burner, F, is turned aside, shutting off the gas supply. By the heat of the gas flame the air is rarefied in the tube, B, and as the tube strikes the water, the air is cooled, forming a partial vacuum, which draws the water into the tube, causing that side of the wheel to preponderate, and inducing a rotary motion, which is continued so long as the gas is supplied and ignited in the manner described.

#### CUTTING GLASS.

For cutting flat glass, such as window-panes, and for cutting rounds or ovals out of flat glass, the diamond is the best tool, and if the operator has no diamond it will always pay to carry the job to a glazier rather than waste time and make a poor job by other and inferior means. When, however, it is required to cut off a very little from a circle or oval, the diamond is not available, except in very skilful hands. In this case a pair of pliers softened by heating, or very dull scissors, is the best tool, and the cutting is best performed under water. A little practice will enable the operator to shape a small round or oval with great rapidity, ease and precision. When bottles or flasks are to be cut, the diamond is still the best tool in skilful hands; but ordinary operators will succeed best with pastiles, or a red-hot poker with a pointed end. The latter is preferred, as being the most easily obtained and the most efficient; and there is no difficulty in cutting off broken flasks so as to make dishes, or to carry a cut spirally round a long bottle so as to cut it into the form of a cork-screw. And, when so cut, glass exhibits considerable elasticity, and the spiral may be elongated like a ringlet. The process is very simple. The line of the cut should be marked by chalk or by pasting a thin strip of paper alongside of it; then make a file mark to commence the cut; apply the hot iron and a crack will start; and this crack will follow the iron wherever we choose to lead it. In this way jars are easily made out of old bottles, and broken vessels of different kinds may also be cut into the most intricate and elegant forms. The red-hot iron is far superior to strings wet with turpentine, friction, etc.