New Inventions.

Memoir of an Inventor.

The last number of the *London Artizan* contains a feeling sketch of the life and character of George Whitelaw, the inventor of the peculiar water wheel illustrated on page 208, Vol. 6, SCIENTIFIC AMERICAN. He died on the 30th of June, last year, in Glasgow, in which city he had learned his trade of engineer with Messrs. Jas. Cook & Co., to whose business he succeeded in company with R. Cook. It seems that he was the inventor of a number of useful improvements in machinery, and had twice received the medal of the London Society of Arts. A number of his water motors are in use in our country, and we believe they give out a high percentage of the power of the water. He was a learned and skillful engineer, and was of a retiring and modest disposition.

Improved Windmill.

The accompanying engravings illustrate an improvement in Windmills, for which a patent was granted to Dr. Frank G. Johnson, No. 196 Bridge st., Brooklyn, N. Y., on the 16th of Jan. 1856.

The invention consists in providing the wings of the machine with weights and springs, which are so arranged as to control the position of the wings, causing them, whenever their velocity is too great, to be more or less turned edgewise to the wind, and *vice versa*. Also in providing the wind wheel with a stop wheel, arranged in such a manner that a slight pressure on the stop-wheel has the same effect on the wings as an increased velocity of the wind, thus enabling the wings to be turned edgewise to the wind, and the mill to be thereby stopped at pleasure.

In the engraving, fig. 1 is a perspective, and figs. 2, 3, 4, sectional views of the improvements. Similar letters refer to the same parts.

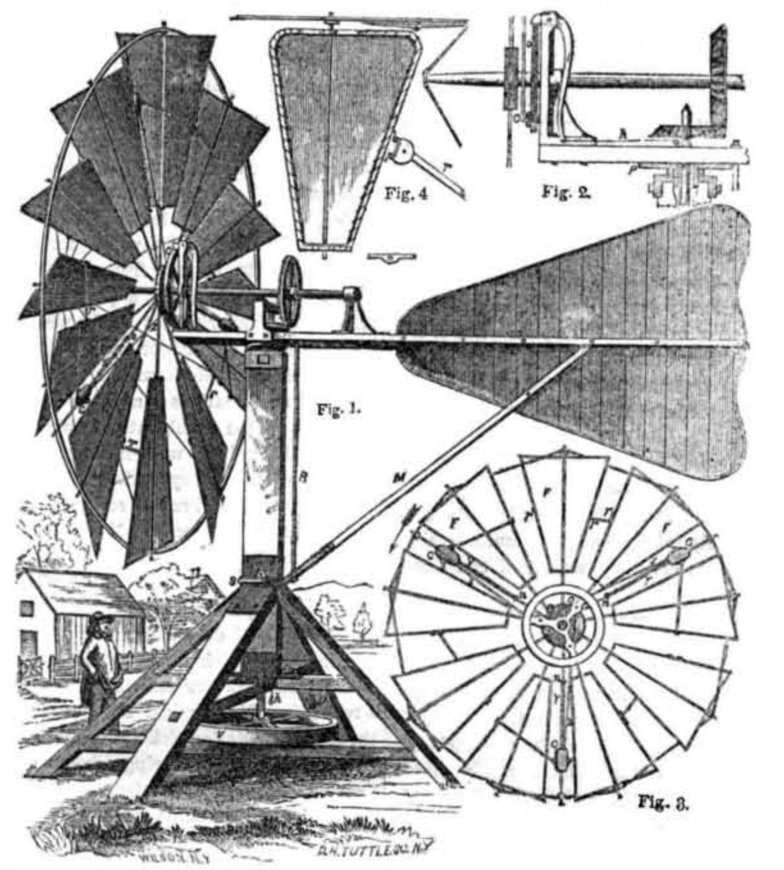
The sliding weights, G, figs. 1 and 3, connecting rods, *r*, and spiral springs, Y, constitute the governor or regulating apparatus. When the wheel revolves at its maximum velocity, the weights, by centrifugal force, are thrown out from the center, and the extremities of the rods, *r*, drawn closer together, which causes the wings to turn edgewise to the wind. The tendency of the mill now is to revolve slower and slower, until the tension of the springs shall overcome the centrifugal force of the weights, which will slip or draw them in towards the center again, and thus turn the wings flat to receive the wind, and give the mill, whenever the wind is sufficiently strong, a uniform velocity, irrespective of the variation of wind and resistance presented to it. One weight controls three wings, by connecting one to another. To give the mill greater or less velocity it is only necessary to diminish or increase the tension of the springs, Y, which is done by turning the nuts, *n*, out from or in towards the center. To provide against very strong and sudden gusts of wind, the wings are made wider on the back than on the front side of their bearings, so that they will turn back and crowd the weights out from the center, before the velocity necessary to do the same could be acquired.

The stop-wheel, C, and the rods, Z, connecting it and the weights, constitute the stopping apparatus, which operates as follows:—Thus, suppose brake I (fig. 2) to be pressing upon the stop-wheel, and thus stopping, or rather holding back, said wheel; while the main wheel turns on, then the point, O, would rise to *o*, or as far above the wind-shaft as now it is below it, and thus throw out the weights from G to *g*, and turn all the wings edgewise to the wind, causing them to stand still until the brake is released; the brake is made to operate by means of a weight hung upon cord *h*. This governor and stopping apparatus, it will be seen, revolve with and constitute a part of the wind wheel, and are independent of every other part of the mill, thus making the wind-wheel alone self-regulating, and almost self-stopping, in spite of the gale.

By means of the brace, M, and collar, S, together with the iron bar, R, the strain of the mill, in its tendency to be blown over, is brought on the bottom of the post or standard as well as on the top. If the mill were sustained by a continuation of the spindle, P, a distance down into the post, the whole mill, by the peculiar action of the wind, would acquire a rocking motion, placing the spindle and post in danger of being broken off, which liability is wholly prevented by the above arrangement. Rotary motion is transmitted from the wind-wheel to pulley V, by gearing, in the usual manner.

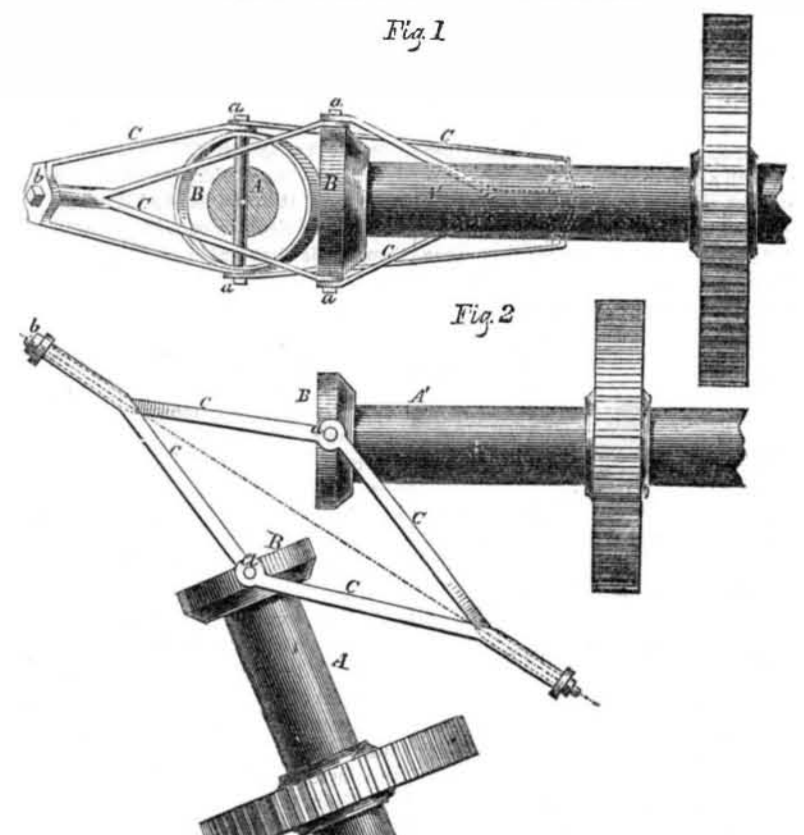
We have from time to time published so many engravings of improved windmills that our readers are, no doubt, quite familiar with their general construction, and it is, therefore, unnecessary for us to enter in a further detail

SELF-REGULATING WINDMILL.



of the present machine. It is sufficient for us to say that its parts are simple; they are nearly all made of strong iron, so as to be very durable. Many of the parts are provided with adjusting screws, whereby a proper degree of tension may be secured; the machine may also be taken down, removed, and put up again very easily. These mills are sold at prices ranging from $60 to $800, according to size. For the lowest sum a machine is furnished having about the power, during a pleasant breeze, of one man. The inventor is the author of an interesting treatise entitled "The Wind as a Motive Power." Further information respecting the present invention can be had by addressing Dr. Johnson, as above.

IMPROVED UNIVERSAL JOINT.



New Universal Joint.

The annexed engravings illustrate a Universal Joint, for which a patent was granted to Mr. Jonas Hinkley, of Huron, Ohio, Jan. 29, 1856.

The common universal joint has only been used to a limited extent, for the reason that it could not be employed except where the shafts were but a few degrees out of line. This improved joint will work without loss of power when the shafts are placed at any degree of an obtuse, right, or acute angle.

The nature of the invention consists in having a pin pass transversely through a hub or boss at the end of each shaft, and having two frames fitted on the ends of each pin on each shaft, the ends of the frames on one shaft being connected to the ends of the frame on the adjoining shaft, so that they may turn one within the other.

A A′ represent two shafts on the end of each of which a boss, B, is attached, each boss has a pin, *a*, passing through it at right angles with the shafts, the ends of the pins projecting a short distance beyond the peripheries of the hubs. On the ends of the pins, *a*, two frames or cranks, C C, are attached, two frames to each pin. These frames work loosely on the ends of the pins, and the ends of the frames on one shaft are connected to the ends of the frames of the adjoining shaft, so that one may turn within the other. See figure 1, in which it will be seen that the ends of the frames on the shaft, A′, pass through holes in the ends of the frames or cranks on the shaft, A, having nuts, *b*, on their ends.

The length of the frames depend on the angle the two shafts form with each other. If the angle is acute, the frames will be longer than if the angle is obtuse, for the connection of the frames is formed on a diagonal line passing through the angles formed by the two shafts, as indicated in dotted lines, fig. 2. As one shaft rotates, motion will be communicated to the other by means of the frames, the ends of which are allowed to turn one set within the other, the sides of the frames or cranks on each shaft, alternately approaching and receding from each other.

The above invention is extremely simple, and is intended to supersede the use of gear wheels for varying the direction of motion; the friction created by gear wheels is avoided. The journals of the shafts are also relieved from all strain or lateral pressure, and consequently are not subjected to the usual wear. The motion being smooth, like common cranks, it avoids the rattle of cog gear; the improvement is therefore admirably adapted for factories. Applied to a side propeller on steamers, it will allow the shaft to pass through the sides of the vessel into the hold, or up on deck; it will allow the propeller to be placed in the water at any depth.

The operation would be the same if only one frame or crank were attached to each shaft, but in that case the journals of the shafts would be subjected to the usual lateral pressure, and nearly the same amount of friction would be created.

Further information may be obtained on application, by letter or otherwise, to the inventor, at Huron, Ohio.

Liebig on Beer.

Liebig recently delivered a lecture at Munich, Bavaria, on the nature and uses of beer—a beverage for which Bavaria has long been pre-eminently distinguished. He stated that it did not contain matter for supplying the waste of muscle, it only was a supporter of combustion to supply warmth. The nitrogenous portion of the barley—the muscle constituent—is separated by boiling and fermentation.

A chemist of Munich, eleven years ago, asserted that the brown beer contained gum, two grains to the quart. Estimating only that which it presents as gum, a man who drinks eleven pints of beer per day would get no more gum in a whole year than a five pound loaf of bread furnishes. Beer serves to make people fat who are thin in flesh, it has the same effect as starch in bread. It has its value in supplying warmth, but not in the formation of blood. It has its use as a stimulant to the nerves, but that does not come into the account of chemistry. Liebig intimated, in conclusion, that the best proportions of food for use were one of nitrogen to three of carbon.

Dressing Circular Saws.

D. McCurdy, of Buckeye, Ohio, informs us by letter that the gumming machines in use in that part of the country, all spring the saws more or less, and that he has failed to cut a cast-steel blade, with an iron disk running at the rate of 800 revolutions per minute. He must run his sheet-iron disk with twice this velocity, at least, before it will effect the object.