Scientific American.

Mew Inbentions.

Improvement in Windmills

The annexed views represent the windmill of Dr. F. G. Johnson, of Brooklyn, for which a patent was granted on the 9th of January

Fig. 1 is a perspective view of the windmill; fig. 2 is a view of the regulating wheel and weighted levers, and fig. 3 is a vertical side section of the wind wheel and adjuncts. This wind wheel, that is the sails and devices connected with it on its shaft, will regulate its own velocity, wholly independent of any other

DESCRIPTION-Fig. 1: O O and P represent the standards and braces of a strong frame to support the machinery. They may be of timber or cast iron. L is a hollow post, through the center of which passes the vertical shaft, M, which receives motion from the wind shaft by bevel gearing, and conveys it by a band from pulley, T, to other machines. R is the step bearing of shaft, M, which has also a crank, U, upon it. S is a screw bolt in the bottom of the bearing box of M, to elevate or depress said shaft. N is the horizontal shaft of the wind wheel; it is supported in proper bearings in a small iron frame, K, springing out from a strong hollow band on the top of the hollow post, L. A A are the wind sails or fans; there are sixteen shown in the figure and represented with their edges turned to the wind. B is the wind vane. It is made of oiled canvas, C, laced into an iron frame, d d. The iron rods, h h, are fastened to the vane and frame, K, and serve as braces. Each fan, A, is composed of a wooden frame, and a sail surface of oiled canvas. It is secured on a central spindle or axis, which at one end plays in the rim, F, of the wheel, and its inner end in a metal plate which has a slot in it to receive a metal pin on the periphery of the regulating wheel, to turn the axis of the fan so as to allow the sail to be exposed full to the wind, or at any angle according to the velocity of the wind wheel. E E are spokes, equal in number to the sails. These are fastened securely in a hub, and into the tire or band, F. aaa are wires to brace the spokes. XXX are weighted levers of the regulating wheel.

On the shaft, N, of the wind wheel, there are placed three iron wheels, (fig. 3,) h is the spoke wheel, c is the regulating wheel, and d is the brake wheel. The hub, h, is firmly secured on shaft N; the other two wheels are not keyed, but free to move back and forth. The regulating wheel and brake wheel revolve with shaft N.

In fig. 2, c c represent the iron regulating wheel on shaft N. b b are pins in its periphery. x x x are three levers, having their fulcrum pins q q q, at d d d, secured in the hub, h.— These levers are weighted at their long ends by screws, y y y. e e e are bolts fastened to the short arms, g g g, of the levers. These have spiral springs, o o o, secured to them, and they pass out nearly to the periphery of the hub, h, and are attached to it for the purpose of keeping the short arms drawn back, and to drag back the regulating wheel, c, which, by pins, b, in its periphery inserted in slots (at a, fig. 3) in the plates which receive the spindles of the fans, keeps them properly adjusted. j j j are cords fastened to the extremities of the short arms, g g g, and to the grooved rim, m, of the brake wheel.

In fig. 3, h is the fixed iron hub on shaft N. N. To the end of this bar are secured iron wire braces (a a a, fig. 1.) k is the iron frame | ly starts. to support the wind wheel. It is united to the sleeve, y y, in the hollow metal band, v, on the top of the hollow post, into which it extends weights, Z, by means of the thumb screws, y, down three or four feet, and terminates in a washer, and is capable of turning round on the | motion. To provide against the mill being | bility of rendering the air cylinders and plungpost to turn the wheel to the wind in whichsoever direction it may be blowing. hf are bevel wheels. jj are cords, and pp is a brake to act upon wheel d, at the point, o, by a person the horizontal shaft, which has the effect, when pulling the cord, i, seen in fig. 1. A screw the mill is at work, to bring the wind wheel bolt tightens the braces, h h, fig. 1, and to directly facing the wind.

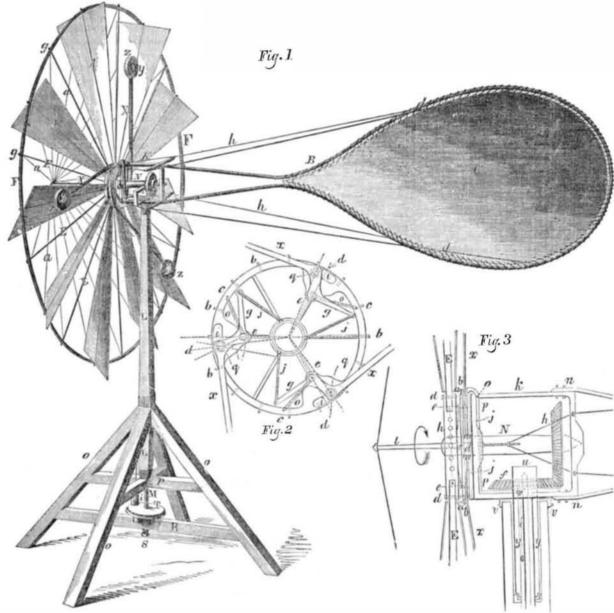
the shaft, N.

ral springs, o o o, fig. 2, attached to the short arms of the weighted levers, X X, and to the wheel, to turn all the sails edgewise to the the centrifugal force of the weights, thereby hub. The tension of the springs keeps the sails set to receive the wind, and the centrifugalforce of the weights turns the sails out of face tension of the springs, ooo, fig. 2, shall over- the wind, and vice versa. or edgewise, to the wind, whenever the velocity come the centrifugal force of the weights, and The sails being pivoted at each end nearly in of the wheel becomes too great. Thus, sup-'turn all the sails back with their surfaces pre- "the center, allows them to be easily controlled

wind. The tendency of the wind wheel now

give the vane, B, a greater or less angle with pose the wind wheel to commence and re- sented to the wind again, thus giving the mill volve at its greater velocity, the weights, Z, (whenever the wind is sufficiently strong) a OPERATION—The principle upon which the by centrifugal force, would be thrown out to uniform velocity, irrespective of the amount or regulator of this windmill operates is centrifu- their greatest distance from the center of mo- variation of resistance presented to it; for, an gal force acting against the tension of the spi- tion, which would have the effect, through the increase of resistance having the tendency to medium of the levers, X X, and regulating lessen the velocity, simultaneously diminishes giving a corresponding increase to the motive will be to revolve slower and slower, until the power, by presenting more surface of sail to

JOHNSON'S PATENT SELF-REGULATING WINDMILL.



by the regulation wheel. In strong and sudden gusts of wind, the regulator is not dependent upon the velocity of the mill for its operation, but upon the inertia of the weights. weights, Z Z Z, (fig. 1,) fastened by thumb | Thus, if a sudden rush of windstrikes the sails, the wheel will instantaneously start, but the weights, by their inertia, will not start with it, lating wheel. They can be made both ways, so that the sails are as instantaneously, or simultaneously, turned edgewise to the wind. Otherwise, before thenecessary velocity for operating the regulator could be obtained, the mill might sustain injury.

To stop and start the mill at pleasure, a four or five pound weight (i, fig. 1) hung upon a wire, passing over a small pulley, crowds the break upon the stop wheel at the point (o, fig. 3,) which, partially stopping, or rather holding back the stop wheel while the main wheel rec is the regulating wheel, and d is the brake which throws the weights out, and turns the granted Dec. 12, 1854. The improvement conshaft. I is an iron bar fastened into the shaft, By taking off the weight, i, the springs turn of which a strong elastic diaphram, of rubber the sails back to the wind, and the mill instant-

> any time, it is only necessary to move the at a less or greater distance from the center of turned out of the wind by its own force acting on the perpendicular shaft or resistance, the vane is set at a slight angle with the line of in each cup is compressed to 150 lbs. pressure.

projection on each sail plate, slipped upon iron other kinds. pins in the periphery or edge of the regulating wheel, as described; or by cogs on the edge of the projections working in cogs on the reguaccording to the size of the mill. The patentee informs us that a mill of from 16 to 20 feet in diameter, and of from 4 to 6 horse power will cost from \$135 to \$200.

Further information can be had by addressing Dr. F. G. Johnson, 196 Bridge st., Brook-

New Air Spring for Railroad Cars.

A trial of a new air spring was lately made on a car belonging to the Harlem Railroad, drum-head. The car bottom is furnished with To give the mill a greater or less velocity at | rounded projections, which rest on these dia-

> The use of air springs on railroads has heretofore been abandoned, owing to the impossiers sufficiently tight. In the present improvement no plungers are employed. The air with-

The experiment is said to have been very successful. The superiority of this spring, over those composed of metal or rubber, is stated to the contributors. This is a good project.

The connection between the sails and regu- have been very sensible. The cost of applicalating wheel may be made by means of a slotted tion is only about 50 per cent. as much as the

This spring appears to be somewhat similar to that invented by Mr. William Beers, of New Haven, Conn., illustrated and described on page 332, Vol. 4 (1849) Scientific American. The only difference is, that the vessel containing the air was made wholly of yielding or elastic material, instead of partly, as in Hayward's plan. Mr. Beers employed an air cushion placed inside of a cup with the supporting plungers resting on the cushions.

Types of Hard Metal.

The Middlesex, Mass., Journal states that Mr. Samuel Weed, of that place, has invented a machine for making types out of copper, iron, brass, &c. Many attempts have been before volves on, has the effect to wind the cords, j, running from this city. The inventor is James made to do the same thing, both in this coun-In it are fastened the inner ends of spokes E. around the grooved rim of the stop wheel, F. Hayward, of Wilmington, Del. Patent try and in Europe, but without practical success, on account of the expense of production. wheel—the two latter are not keyed to the sails edgewise to the wind, and the mill stops. sists in providing a metallic cup, over the top A successful improvement of this kind would confer vast benefits to the art of printing. At and leather, is stretched—like the skin of a present, types are cast in soft metal, and they soon wear out.

> Bailey's patent car seats are being tried on the night express trains of the New York and Eric Railroad. These seats are made so as to be convertible into reclining lounges when de-

> A correspondent of the New York Tribune states that a scheme is on foot in Boston to establish an Inventors and Industrialists' Exhibition,—the proceeds to be distributed among