Addison P. Brown,

Wind Wheel.

No. 87,628. Patented Mar. 9. 1869

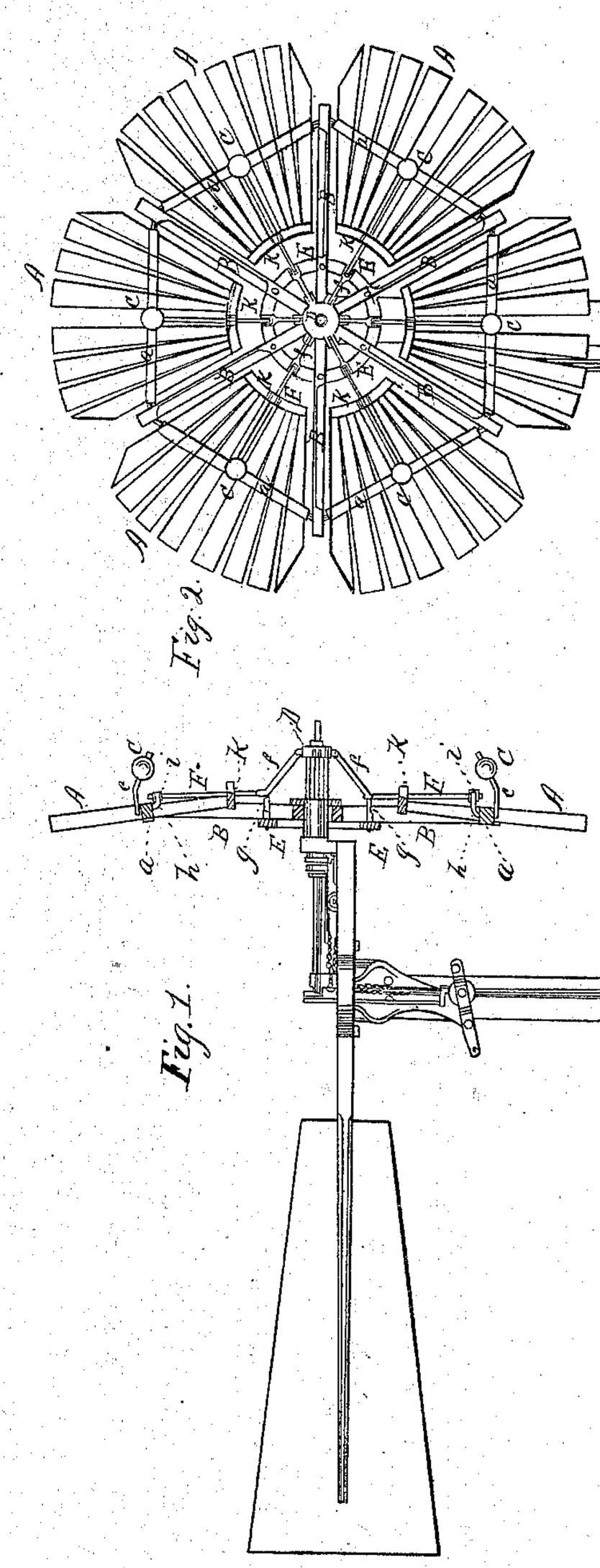

Fig. 1.

Fig. 2.

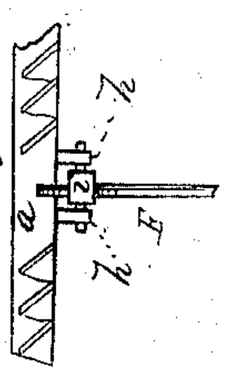

Fig. 4

Fig. 5

Fig. 3.

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ADDISON P. BROWN, OF SYRACUSE, NEW YORK.

IMPROVEMENT IN WIND-WHEELS.

Specification forming part of Letters Patent No. **87,628**, dated March 9, 1869.

Be it known that I, ADDISON P. BROWN, of Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in the Construction of Windmills; and I do hereby declare and ascertain my said invention as follows:

My improvements relate, principally, to rosette windmills, by which the regulating movements are made with greater steadiness and reliability than heretofore, and the general efficiency of the mill is much improved, as hereinafter explained.

It is apparent to the critical observer that, to obtain the greatest practical effect from the wind, it is necessary to have all the surfaces inclined thereto in one direction, on the front or impinging side, while the rear surfaces should so recede as to allow the freest passage through the slats. This is most important in rosette windmills, but has heretofore been overlooked in practice.

Again, the regulators heretofore used have lacked the power to act with sufficient expedition and sensitiveness in sudden variations of wind, so as to prevent a perceptible and injurious increase of velocity, all of which is provided for in my present improvements, which may be described as follows:

In the accompanying drawings, A A represent the sails or sections of the rosette or disk. B B are the main radial arms, to which the sections A are pivoted. D is the ordinary sliding head used in windmills; S, the balance or counter weight. E is an annular plate or hub affixed to the rear side of the arms B to strengthen and steady them with relation to each other. The axes of the sections are on chord-lines between the arms. To each axis *a* there is a governing-ball, C, affixed by means of a rigid rod, *c*, projecting forward from the axle *a* of each section by means of a jointed rod, F *f*, and a short arm, *h*. Each rod F *f* is stayed and supported in place by a pivoted link, *g*, Figure 1. The outer ends of the rods F are screwed or otherwise fastened into the rock-shaft *i*, so as to be adjustable, supported by an arm, *h*. (See Figs. 1 and 4.) The inner end of each section A is to be provided with a cast-iron stay-bar, K, or its equivalent, which is at its center formed into a loop, *k*, (see Fig. 3,) so as to make room for the rod F. This bar is made of metal, so as to act, by its weight, as an auxiliary governor in aid of the ball C, while at the same time it firmly secures the inner ends of the slats of the section; and further, by using this stay-bar K, the thin slats of the sections of which the rosette is composed can be twisted so as to give their inner ends more lead in proportion to their decrease in rotative velocity toward the center.

In order to present the least resistance practically to the effective action of the wind, I bevel the radial arms B on their front faces, so as to cause them to act as propelling-surfaces in aid of the sections; and I also scarf off the rear side correspondingly, to present the least retarding-surface possible to the action of the air, (see section, Fig. 5;) and to carry this feature all through the rotating sections, I chamfer off the front edge of each slat in the sections A, the rear face, and the opposite edge in the rear, so as to present as sharp an angle as is consistent with practical construction.

By the form and arrangement above described of the connections between the axles *a* and the sliding head D, the two parts of the rod F *f* gradually come more into line with each other as the outer ends of the sails are thrown back, so that the resistance of the regulating-weight *s* increases as the sections A incline from the wind, the motions being by this means, which is different from that of any regulator heretofore made, and novel, made with greater accuracy, and the tendency of the sections to fly beyond a proper position with an increase of velocity is obviated. As the largest surface of the sails is always placed outside of their axles *a*, and the wind, acting upon the sails, tends to turn them out of its action, this tendency is resisted with increasing force (in consequence of the peculiar connection between the sliding head D and the sections A) by the weight.

By using less weight at *s*, the balls C may, in some instances, be dispensed with, and the centrifugal force of the stay-bars K be alone relied on to regulate the angle of the sails.

By means of the adjustable connections between the rods F and the rock-shafts *i*, the sails can be readily set even and fairly adjusted to the wind and each other.

This mode of adjusting the sections all to a

like position is much more perfect and convenient than the methods heretofore employed, and can be readily extended to one or more series of sections outside of the first, as are sometimes used in large rosette windmills.

Having thus fully described my improvements in rosette windmills, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the governing-weights C and bars K with the sections of a rosette windmill, substantially as and for the purposes set forth.

2. Also, the sliding head D and axes *a*, constructed as described, for the purpose of producing an increased resistance as the sections are turned by the increased force of the wind, substantially as above specified.

3. Also, the radial arms B and radial slats, so beveled or scarfed off as to cause them to present the greatest and most perfect propelling-surface to the wind with the least retarding force consistent with practical construction, as hereinabove set forth.

4. Also, the general combination of the governors C K, sections A, beveled arms B, regulating-connection, and sliding head, constructed and operating substantially as and for the purposes specified.

ADDISON P. BROWN.

Witnesses:
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