Nov. 3, 1925. 1,559,696

J. HEBERLING

PIN WHEEL

Filed May 31, 1924

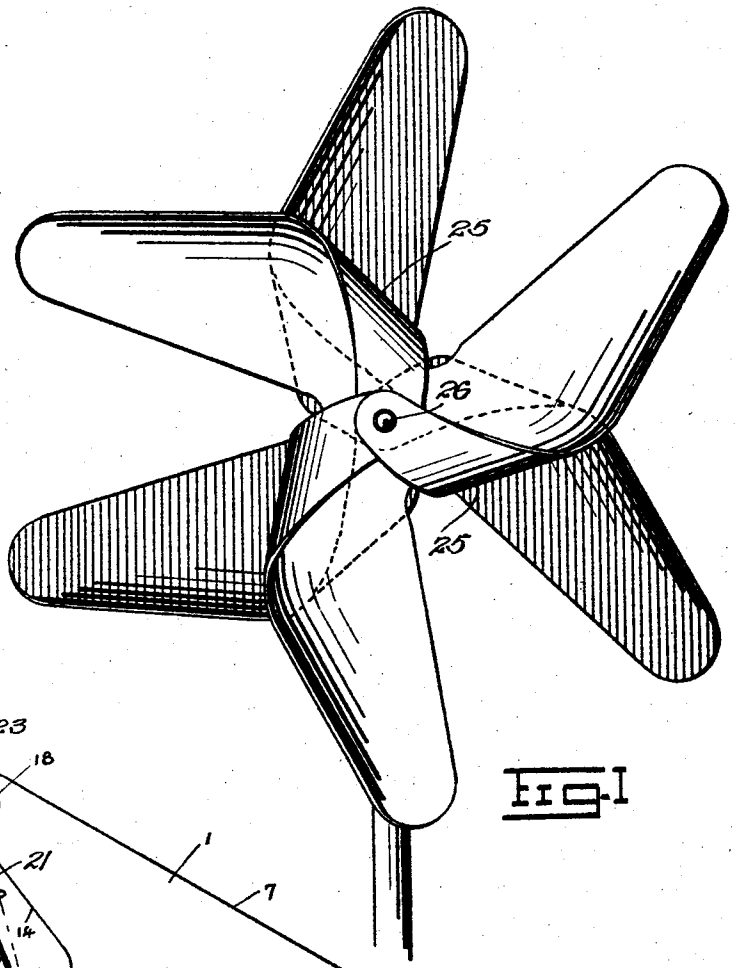


Fig. 1

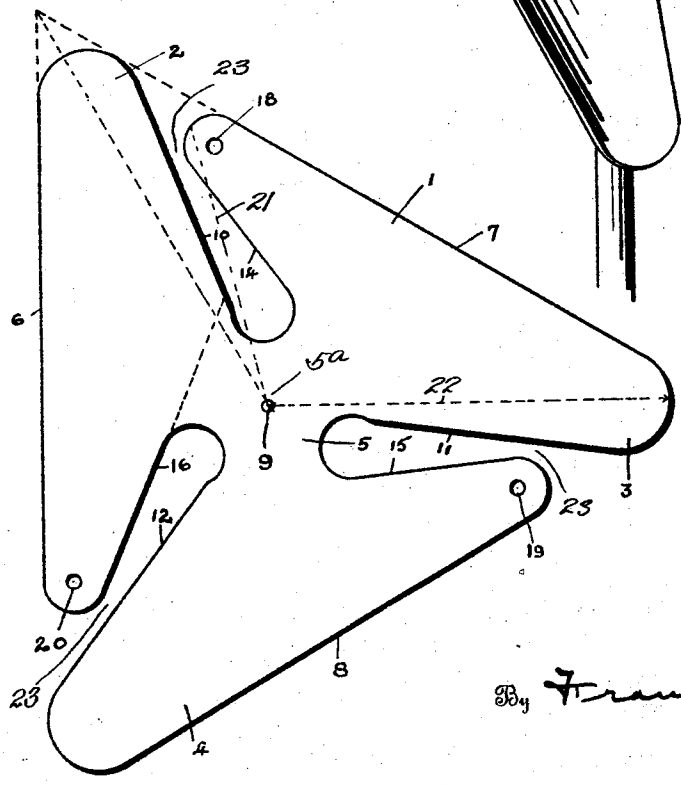


Fig. 2

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Patented Nov. 3, 1925. 1,559,696

UNITED STATES PATENT OFFICE.

JOHN HEBERLING, OF ROCHESTER, NEW YORK, ASSIGNOR TO BASTIAN BROTHERS COMPANY, INC., OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

PIN WHEEL.

Application filed May 31, 1924. Serial No. 716,939.

To all whom it may concern:

Be it known that I, JOHN HEBERLING, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Pin Wheels, of which the following is a specification.

The present invention relates to wind wheels and an object thereof is to provide a wind wheel construction in which the resisting surfaces are reduced to a minimum. Another object of the invention is to provide a pin wheel having more than two blades and so constructed that two propellers may be arranged to turn about a single axis in close proximity without any material air interference between them.

In the drawings Figure 1 is a front elevation of my improved pinwheel, and

Figure 2 is a plan view of the blank from which the windmill is made.

In the drawings like numerals indicate like parts. In the drawings reference numeral 1 indicates the blank from which the rotor of my improved windmill is made. This blank in this instance is made from a single piece of triangular stock, and is cut so as to form three blade forming elements which are indicated by the numerals 2, 3 and 4 all of which blades are in this instance integrally connected by the central portion 5^a by reduced necks 5. The outer edges 6, 7 and 8 of the vanes preferably coincide substantially with the edges of an equilateral triangle of which the point or turning center of the pin wheel 9 is the center. The long inner edges 10, 11 and 12 of each blade are shown substantially radial to the center but while they may they preferably do not extend to the angle of the triangle that circumscribes the blank, but do preferably extend to a point to the right or left of the angle of the triangle. The end of the vane is thus made wide and its rotating effect is thereby greatly increased. It is not necessary that the lines 10, 11 and 12 be radial to the center of rotation. The short inner edges 14, 15 and 16 are preferably tangential to a small circle. Any of these lines may be curved instead of straight. In all embodiments the blade forming elements are in the form of two oppositely extending arms, so arranged that the distance 21 from the extreme outer end of one arm to the turning center 9 is less than the distance 22 between such center and the extreme outer end of the other arm. Furthermore, the blade forming elements are separated by recesses, the mouths 23 of which lie entirely to one side of the straight line 22 drawn from the center 9 to that outermost portion of a blade forming element which is to form the tip of the blade, said recess being of such shape that when the shorter arms are curved over the longer arms, the resisting surface 25 formed by such shorter arms will extend less than one half of the lengths of the blades.

The short ends of each vane are perforated as indicated at 18, 19 and 20, and these ends are bent over and gathered together so that the openings therein will be concentric with or in line with the center 9 of the rotor. A pin or shaft 26 is passed through the center of the rotor on which pin the rotor is free to rotate as a windmill. The ends of the blades may be fastened together by a collet through the openings thereof which will hold the blades together and furnish a bearing therefor. A collet may also be provided in the center 9. If the blank is in the position shown in Figure 1 and the short arms are turned to the left the mill will turn in a direction counterclockwise. If the blank is turned upside down and the short arms are turned to the right the mill will turn clockwise. The net result of forming a rotor in this way is that one end of each vane is long and wide and is well adapted to catch the wind and the other end is short and narrow and is adapted to bend readily to the desired position so as to present a small front to the wind with the least resistance and expose practically all of the large vane to the wind and hold it in flared position so as best to secure reaction to the wind. The lines may be varied within wide limits, but I have shown the blank cut to secure the best results in this particular.

In Figure 1 I have shown a dotted line across the inner end of one of the vanes where it joins the center. This is to bring out what may be considered the shape of the vane and the shape of the center to which it is attached.

Two of these windmills can be placed on the same shaft to turn in the same direction or in opposite directions. Windmills are

ordinarily mounted on a stick, that is the shaft on which the mill turns is fastened to a stick.

The rotor formed in this way is easily and cheaply formed and gives the blades a very advantageous curve and exposure to the breeze, and I have found by experiment that it turns very easily and freely in a very light breeze, more so it is believed than any of the windmills heretofore devised.

I claim:

A wind wheel blank having a central portion and three symmetrically arranged blade forming elements, each connected to the central portion by a reduced neck, said blade forming elements having two oppositely extending arms, the distance between the extreme end of one arm and the center of the central portion being greater than the distance between the extreme end of the other arm and the center of the central portion and the elements being separated by recesses whose mouths lie entirely to one side of straight lines drawn from the center of the central portion to those outermost portions of the blade forming elements which are to form the tips of the blades, said recesses being of such shape that when the shorter arms are curved over the longer arms, the resisting surfaces formed by such shorter arms will extend less than one half of the lengths of the blades.

In testimony whereof I affix my signature.

JOHN HEBERLING.