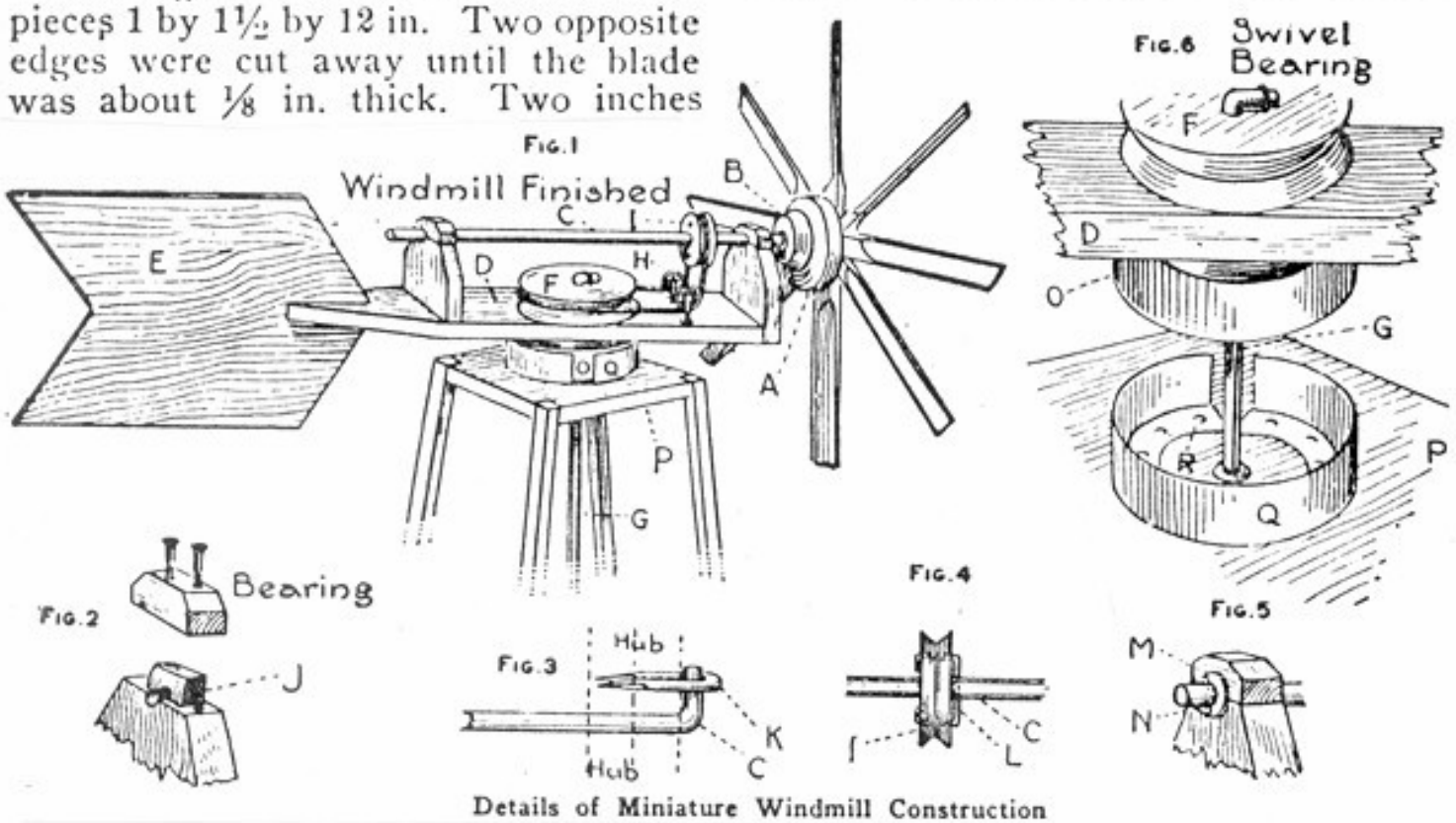
Welcome To Our Homemade Power Section

(From Popular Mechanics 1913)

How to Make a Miniature Windmill

The following description is how a miniature windmill was made, which gave considerable power for its size, even in a light breeze. Its smaller parts, such as blades and pulleys, were constructed of 1-in. sugar pine on account of its softness.

The eight blades were made from pieces 1 by 1½ by 12 in. Two opposite edges were cut away until the blade was about ⅛ in. thick. Two inches were left uncut at the hub end. They were then nailed to the circular face plate A, Fig. 1, which was 6 in. in diameter and 1 in. thick. The center of the hub was lengthened by the wooden disk, B, Fig. 1, which was nailed to the face plate. The shaft C, Fig. 1, was ¼-in. iron rod, 2 ft. long, and turned in the bearings detailed in Fig. 2. J was a nut from a wagon bolt and was placed in the bearing to insure easy



Details of Miniature Windmill Construction

washers were placed on shaft C, between the forward bearing and the hub of the wheel to lessen the friction.

The bed plate D, Fig. 1, was 2 ft. long, 3 in. wide and 1 in. thick and was tapered from the rear bearing to the slot in which the fan E was nailed. This fan was made of ¼-in. pine 18 by 12 in. and was cut the shape shown.

The two small iron pulleys with screw bases, H, Fig. 1, were obtained for a small sum from a hardware dealer. Their diameter was 1¼ in. The belt which transferred the power from shaft C to shaft G was top string, with a section of rubber in it to take up slack. To prevent it from slipping on the two

2. J was a nut from a wagon bolt and was placed in the bearing to insure easy running. The bearing blocks were 3 in. wide, 1 in. thick and 3 in. high without the upper half. Both bearings were made in this manner.

The shaft C was keyed to the hub of the wheel, by the method shown in Fig. 3. A staple, K, held the shaft from revolving in the hub. This method was also applied in keying the 5-in. pulley F, to the shaft, G, Fig. 1, which extended to the ground. The 2½-in. pulley, I, Fig. 1, was keyed to shaft C, as shown in Fig. 4. The wire L was put through the hole in the axle and the two ends curved so as to pass through the two holes in the pulley, after which they were given a final bend to keep the pulley in place. The method by which the shaft C was kept from working forward is shown in Fig. 5. The washer M intervened between the bearing block and the wire N, which was passed through the axle and then bent to prevent its falling out. Two

section of rubber in it to take up slack. To prevent it from slipping on the two wooden pulleys a rubber band was placed in the grooves of each.

The point for the swivel bearing was determined by balancing the bed plate, with all parts in place, across the thin edge of a board. There a ¼-in. hole was bored in which shaft G turned. To lessen the friction here, washers were placed under pulley F. The swivel bearing was made from two lids of baking powder cans. A section was cut out of one to permit its being enlarged enough to admit the other. The smaller one, O, Fig. 6, was nailed top down, with the sharp edge to the underside of the bed plate, so that the ¼-in. hole for the shaft G was in the center. The other lid, G, was tacked, top down also, in the center of the board P, with brass headed furniture tacks, R, Fig. 6, which acted as a smooth surface for the other tin to revolve upon. Holes for shaft G were cut through both lids. Shaft G was but ¼ in. in diameter, but to

keep it from rubbing against the board P, a ½-in. hole was bored for it, through the latter.

The tower was made of four 1 by 1-in. strips, 25 ft. long. They converged from points on the ground forming an 8-ft. square to the board P at the top of the tower. This board was 12 in. square and the corners were notched to admit the strips as shown, Fig. 1. Laths were nailed diagonally between the strips to strengthen the tower laterally. Each strip was screwed to a stake in the ground so that by disconnecting two of them the other two could be used as hinges and the tower could be tipped over and lowered to the ground, as, for instance, when the windmill needed oiling. Bearings for the shaft G were placed 5 ft. apart in the tower. The power was put to various uses.

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