

Whirligig Pivot Bearing

New life for old CD/DVD drive components

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Received a Whirligig for father's day. Pivot bearing was simply a sheetrock screw attached to support post. Wanted to find a better bearing, and low and behold an old CD drive came to the rescue.

Introduction

I have always liked and been intrigued by Whirligigs, simple animated ornaments powered by the wind. For Father's day 2013 my wife gave me one made by a local craftsman. It is figure sawing wood. Appropriate for us as we heat with cordwood so putting up our annual supply is a yearly task.

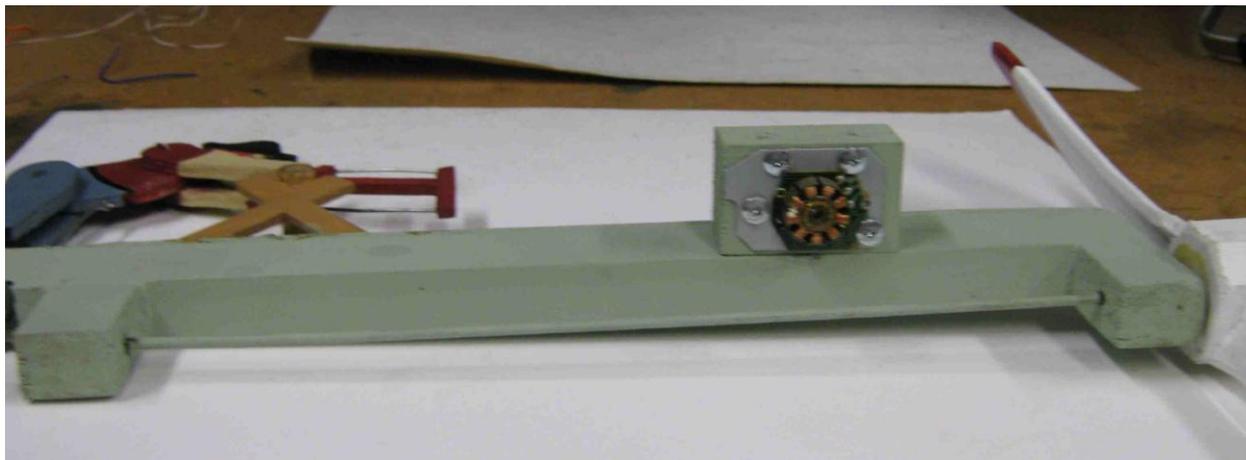
A propeller drives a shaft that animates a woodsman sawing a log on a sawbuck. To keep the propeller aimed into the wind the Whirligig pivots on its post. The pivot was a small block of wood screwed to the horizontal arm. A sheetrock screw passed through a clearance hole in the mounting block into the post. To reduce friction there was a piece of plastic between the block and post.

Unfortunately there was still a fair amount of friction, so it needed a lot of wind to position it properly and the clearance hole around the screw was pretty sloppy causing the Whirligig to sag.

Bearing Search

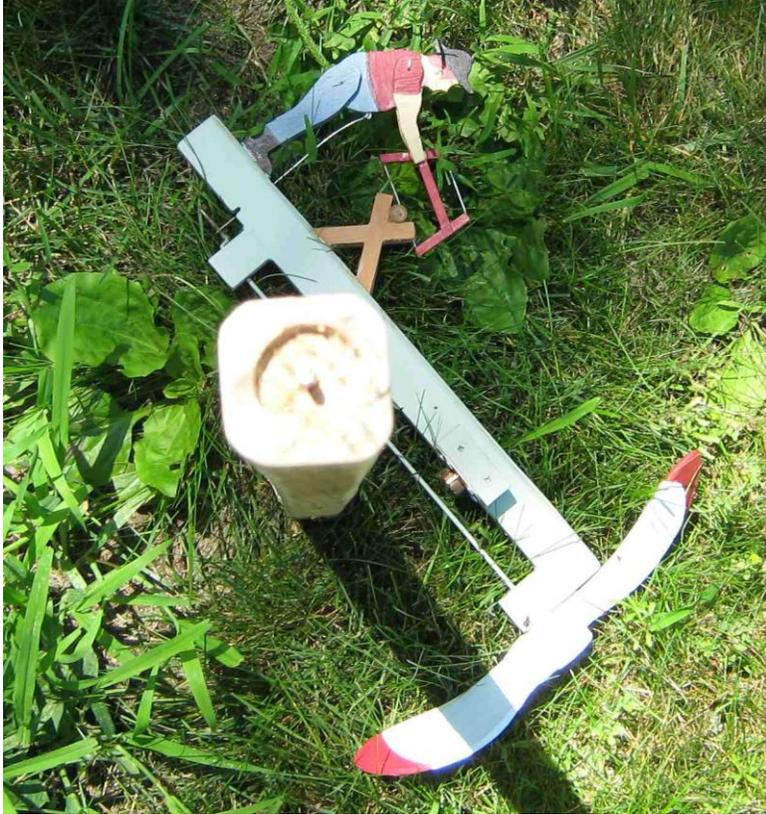
I wanted to replace the screw with a real bearing to reduce friction allowing the Whirligig to more readily position itself into the wind. A quick search did not turn up anything appropriate. I had an old CD drive lying around and thought the platter motor might have a useful bearing for this project. I struck pay dirt. The motor turned out to be perfect; the bearing was swaged to a metal mounting plate and the rotor easily popped off. Even better the two slide rods for the drawer mechanism were the same diameter as the motor bearing. This made the project much simpler than trying to figure out how to attach the motor rotor.

Construction



I broke off the PCB attached the stator coils and drilled out the mounting holes to use slightly larger screws. Attached the assembly to the existing pivot block. I filled the old screw hole in the pivot block with wood putty to keep rain out.

The original post was a piece of $\frac{3}{4}$ " square pine that was not pressure treated. I replaced it with a pressure treated baluster.



I drilled a countersink hole to clear the coils. The only part of the project that is at all critical is the hole for the pivot rod. It needs to be centered and parallel to the post sides and just deep enough so the bearing does not hit the post but not so shallow that the rod is unnecessarily extended. Drilled it slightly undersize and gently tapped the rod into the post bottoming it out in the hole.

The baluster is somewhat larger than the old post so used a router with a chamfering bit to ease the corners.

Pointed the bottom of the post with an axe. To install Whirligig drilled a clearance hole in a scrap 2x4 allowing me to hammer the post into the ground without damaging it.

The Whirligig simply sits on the post shaft. I coated the shaft with a little wheel bearing grease. Not sure if that was necessary. I assume the bearing is phosphor bronze and the shaft looks like it is chromed so rust should not be an issue. There is not much play in the bearing so I don't think there will be a problem with high wind lifting it off the post but have not had it long enough to know for sure. Having it removable is nice so it is easy to take in during the winter.

Finished Product

