

Building an Anemometer

Background

You're used to feeling the wind. Sometimes there's not much of it and other times you wish it would stop. An anemometer is used to measure wind speed.

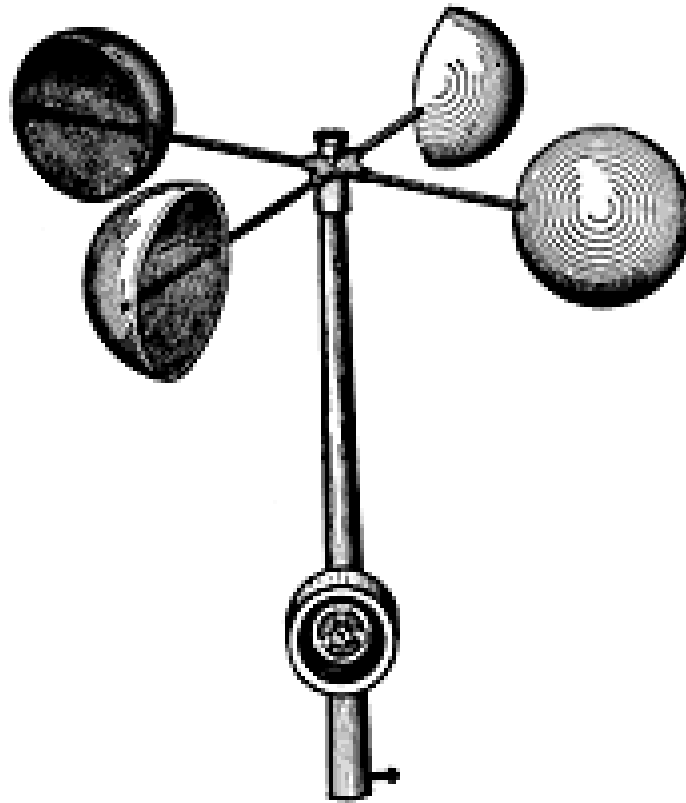
Materials

- old bicycle wheel assemblies
- bicycle speedometer
- 5, 2-liter soda bottles
- 1-gallon plastic milk container
- 4-foot wood closet rod
- hammer
- 3 "L" shaped wood brackets
- drill with drill bits
- nuts and bolts
- washers
- level
- file
- fine sand-paper
- wood screws
- twist ties

Procedure

1. Clamp the closet rod firmly in place on a work bench. Drill a shallow hole in one end of the closet rod with a diameter slightly smaller than the threaded screw on the bicycle wheel's axle.
2. Be sure the caps on the 2-liter bottles are securely tightened. Cut off the bottoms of the bottles. File or sand any rough or sharp ends until smooth.
3. Drill 4 holes in the wheel using a drill bit the diameter of the bolts you have. The holes should be at 0 degrees, 90 degrees, 180 degrees and 270 degrees on the wheel. Drill a second hole 4 to 5 inches next to each of the first ones. It's important that the distances be exactly the same for each new hole. Otherwise, your wheel will be out of balance. You now have 2 holes apiece through which you will secure a nut and bolt (the screws must face outward).
4. All the bottles must face the same direction when mounted on the wheel. The open ends and top will lay on the circumference of the wheel. Mark the bottles where the bolts touch. Drill or punch holes at those locations.
5. Put washers on the bolts. (You will now have a bolt through a hole, a nut on the bolt and a washer on the bolt.) Slip a bottle in place on the bolts. Reach in the bottle and put a washer on the bolts. Be careful, in case you left any sharp edges! Then tighten the nuts in place. Do the same for the other bottles.
6. If you have room, you can mount another 4 bottles on the wheel.
7. Turn the wheel assembly sideways and place the axle screw over the hole in the closet rod. Hammer the screw into the hole.

8. Mount and level the anemometer to the side of a shed or construct a base from 24 x 24 inch by 3/4 inch sealed plywood. L-brackets will make it easy to attach the rod using wood screws.
9. Attach the speedometer to the wheel according to manufacturer's instructions. Attach it to the closet rod, or anywhere you can see it well. If it isn't waterproof, design a cover for it.
10. Cut the bottom from a 1-gallon plastic milk container to use as a rain shield for the axle. Poke holes around the cut end to insert twist ties. Attach the ties securely to spokes. Plastic sheeting can also be used to cover a larger area.
11. Be sure the axle is accessible so you can oil it periodically.
12. Take readings several times a day, more often as weather changes are apparent.



http://etc.usf.edu/clipart/46600/46693/46693_anemometer.htm