

Mini Girandolas by Jim Biersach

Materials needed:

- ▶ one gallon ice cream bucket
- ▶ zip ties or wire
- ▶ 6 to 8 class C rocket motors
- ▶ quick match
- ▶ short piece of visco or black match
- ▶ 1/4" to 3/8" diameter dowel rod
- ▶ 2x2 wooden stake, at least three feet long

Introduction:

The first girandola I ever saw was at the PGI convention in Pennsylvania. It was paraded around and looked like a big birthday cake. They hauled it out to the edge of the shoot site with a lot of hoopla and fanfare. When they lit it up it was very impressive, but I had no idea what it was or how it worked.

Later on while at the 1997 PGI convention in Amana, I found the girandola had become a competition event and there were three or four entries. My favorite entry was one made by Tom Dimock, later to become famous for his girandolas, which went up and hovered for a few seconds, then took off into the sky (winning second place). At this point I became even more interested in these flying contraptions.

At a later PGI convention held in Wyoming, Tom Dimock started giving seminars on how to make these newly rediscovered devices. It was at this point that I became hooked. Tom explained the traditional method of building bamboo frames, then mentioned that people had also made simple frames from the bottom of five gallon buckets.

Bill Kimbrough, another famous girandola builder who is largely credited for bringing these devices to the American pyro community, gave me some bamboo to make my own girandola and I went home with a big grin on my face. I made a girandola with the bamboo frame and entered it into competition at Fargo the following year... and got third place! OK, there were only three entries, but I was excited none the less.

One night I was thinking about girandolas and the bucket bottom idea, then went to the plastic recycling bin to see what I could find. An empty one gallon ice cream pail looked like it would work well, so I headed down to my dungeon to give it a try. Forty five minutes later I emerged with my first "Mini Girandola," made from commonly available household items.

The project shown here uses some class C rocket motors to simplify the project even further so that even very novice pyros can give it a try.

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Construction:

1) The first step is to empty a one gallon bucket of ice cream. I hope this step is self explanatory.



Figure 1: Plastic ice cream bucket or similar sized container.

2) Now cut the bottom of the bucket off so that it is about an inch and a half tall, as seen in Figure 2.



Figure 2: Bottom removed from bucket.

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3) Cut some spokes out of the bottom by removing three or four symmetrically spaced triangular pieces. This lightens the frame and also reduces air resistance as the girandola rises.

4) Drill about a 3/8" hole in the direct center of the bucket, which will be used to mount the girandola on a launching stick.



Figure 3: Pieces cut away to create spokes.

5) Drill some holes through the side of the frame, which will be used to tie the rocket engines to the frame. Six to eight engines works best here. I have tried twelve, but this did not work as good as expected.



Figure 4: Holes drilled in sides to receive zip ties or wires.

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6) Take some class C stick rockets of your choice and remove the sticks. I dip the wick in some prime so that it ignites easier, since class C rockets usually use visco instead of black match for the fuse.



Figure 5: 1/2" I.D. class C rocket used for drivers.

7) Attach the motors to the frame using zip ties or wire. Some people like to hot glue the motor to the frame first before tying it on, which helps hold it in place. The motors should be at a slight angle as seen in Figure 6. This angle is important, as it ensures that the wheel will spin as it takes off. The spinning stabilizes the wheel so that it doesn't flip over when it leaves the launch stick and is a critical requirement for girandolas to work properly.



Figure 6: Wheel with motors attached at slight angle.

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8) Use quickmatch to connect all of the rocket fuses together in one continuous loop, as seen in Figure 7. Some beginners may have a hard time obtaining quickmatch and will have to make their own by using the techniques described here on Passfire. Holes are punched in the side of the quickmatch wrapper so that the rocket fuses can be inserted into the match pipe. The two ends of the quickmatch should be connected together so that you have one continuous loop for the fire to travel through.



Figure 7: Motors fused together with continuous loop of quickmatch.

9) Punch a hole in the side of the quickmatch ring and insert a piece of fuse that will be used to ignite the girandola.



Figure 8: Completed girandola.

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10) At this point the girandola is ready to launch. The final step is to make a launch pad that allows the girandola to spin without falling over during the lift off. This is done by mounting a dowel rod vertically into the end of a wooden stick, as seen in Figure 9. The dowel rod should be slightly smaller than the hole drilled in the bucket bottom so that it can easily spin. The length of the pin needs to be about six inches long so that the girandola has time to get spinning up to speed before leaving the pin. You will usually also need some kind of bearing between the launch stick and the bucket bottom, such as a few washers, so that there is not too much friction when the wheel is trying to spin.



Figure 9: Launch stick with guide pin inserted.

Lastly it's time to light er up and see how well you did. If it flips over, then you might need more angle on the engines or a longer pin. If it didn't get off the pin, you'll need to find some larger rocket engines or maybe use more of them. If all went well, then congratulations!

Note:

Almost any kind of plastic container can be used to make small girandolas as long as the plastic is not too flimsy. Tuna cans have also been used with success to make very tiny girandolas that work quite well. Note that as girandolas shrink below about 6" diameter they start to look more like tourbillions, and it is less work to just build a tourbillion to get the same visual effect.