

Nightmare in Nottingham Manor

<http://www.castlenottingham.com/MegaZooka.html>

The MegaZooka

or the

Poor Man's Air Cannon

or

if it is good enough for Universal Studios

then it is good for you too.

A seriously cool and easy Halloween Haunt project anyone can make.

If you make any improvements to this design please let us know here at Castle Nottingham - we may want to steal . . uh, er, I mean borrow them.

AirZooka History

This is one of those things that you look at and say, "I coulda' thought of this." And then you realize you didn't, and nor will you be getting any of the profit from it either.

AirZooka inventor, Lt. Brian Jordan, a United States Naval Aviator, who flies an E-6 jet, came up with the idea as a youngster while trying to make a smoke ring generator out of cardboard boxes. It wasn't until a few years ago that he re-tried to develop his idea and make something happen with it. "Back then I used cardboard which was too flimsy, but then, using my Aeronautical training, scientific principles and my imagination I found that plastic cans and other elastic materials seemed to work great," says Jordan, who was actually flying over Washington DC on September 11th, 2001. "I added a handgrip for easier portability and the AirZooka was born -- minus the smoke, of course." Like many toy inventors, Lt. Jordan didn't have a clue as to how to break into the toy market. He was rejected almost everywhere he went. "It was really taxing to the point where I wanted to give up, but with my wife's assistance, I got the break I needed," he says. Lt. Jordan is quite a story himself, overcoming a learning disability and being one of only 300 African American Aviators out of the approximately 11,000 in the Navy, he is an example of dedication and American entrepreneurship.

Creative Group Marketing (CGM), helped Lt. Jordan to transform the AirZooka from an idea into the finished product. Company President, Gary Ahlert, worked almost three years in getting the product to the marketplace. "Brian got quite an education in the realities of the toy business and we encountered hundreds of rejections. It was a period of many ups a downs." The AirZooka was finally licensed by Can You Imagine, Incorporated out of Chatsworth, California and like the jets Lt. Jordan flies, things are really taking off. "This toy is incredible, safe, fun and has a kind of mysterious 'gee-whiz' quality that makes everyone want to try it."

Universal Studios used the AirZooka at their Halloween Horror Nights last year to shoot a ball of fog and smoke rings at passers by.

Castle Nottingham did too.

How It Works

from

www.AirZooka.com

Even the simplest-looking apparatus can turn out to be surprisingly complex. The AirZooka is just a big, brightly colored plastic barrel, a little narrower at the front, with a loose plastic sheet attached to a pair of elastic cords at the back. Pull back on the sheet, let it go, and—*whump!*—you've fired a (harmless) 60-mile-per-hour blast of air at an unwitting bystander 20 feet away.

Simple, unless you're the target. You were just hit by something that wasn't just wind but wasn't entirely solid either. Yet after traveling a fair distance, it still felt compact. The directions on the box say it's a ball of air, but how do you make a ball out of air? And why should it hold together for any distance at all? Herb Tranthum, one of the engineers who designed the AirZooka, explains it this way: When you fire an AirZooka, a high-pressure shock wave leaves the toy first, quickly followed by an air ball. The shock wave creates a vortex of swirling air in its wake, which keeps the air ball intact and in place. If you've pulled the plastic sheet back just right, the ball threads the spinning ring of air and carries it on to your target. If your shooting angle is a bit off, however, you shoot a ring of air, not an air ball—though it feels the same to your target.

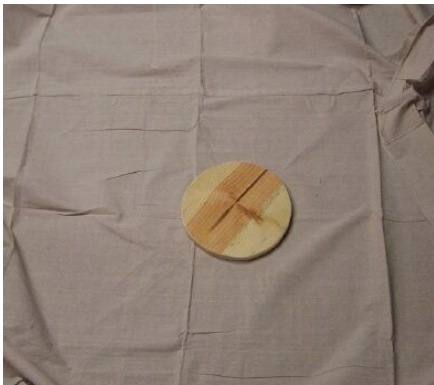
Keys to making your own.

1. Slightly conical barrel shaped container.
2. Spring loaded (bungee strap) diaphragm.
3. The business end (the end with the hole that air comes out) must have a rim to slow the outer edge of the air coming out so that it begins to fold into itself. This is what keep it cohesive for 20-30 feet as a ring of moving air traveling at 60MPH with a rotating ball of air behind it. Simple fluid physics.

How To Instructions



1. Using the same proportions as a real AirZooka cut a hole in the bottom of your garbage can using a jig saw. It goes without saying - OK I'll say it. Use all safety equipment (IE gloves, protective eyewear, etc). Multiply the diameter of the bottom of your can by 0.2 and this will approximate the rim thickness.



2. Using Liquid Nails glue one wood circle to the center of your canvas, flip it and glue the other one exactly opposite so that the canvas is sandwiched between it. Yes my circles are green because I'm reusing wood from another project. Recycling is a good thing.



3. Once sandwiched together use drywall screws to secure it together. Flip it and do it to the other side offsetting the screws. Always pre-drill all holes for screws to avoid sad mishaps





4. Drill four 1/4in holes equidistant around the large hole in the bottom of the can using one of the large washers as a guide to how close to the edge you can come. Then place one nut and lock washer on the eye bolts. The eye will be on the inside of the can for the bungee straps to attach to. Insert them and then top them with one large washer, one lock washer, and one nut and tighten down. The large washer is to prevent the bolt from pulling through the metal when the bungee are pulled back.



5. Now hang the canvas and paint on a mixture of latex thinned with water. Don't use carpet latex for this. Alternatively a mix of silicone caulking thinned with naphtha may also work.

6. While this is drying I inserted the lag bolts 16in from the can's bottom using nuts and washers as mentioned above. I'll use this to mount it later. If you wish to mount it in some other way then skip this step.



7. Pre-drill a hole for the eyehole screw and insert it into the center of one side of your wood disk. This should extend into both pieces of wood but not through. It will have to hold up to much of the force so make sure it is secure. Then using the link fastener (the kind with a nut closure on it, not the snap kind that can come undone) attach the bungee to the eyehole screw



8. Put the bungee and canvas into the top of the can and secure the bungee hooks to the four eye bolts with Duct Tape so that they will not come loose when firing.



9. Now turn the can right side up and situate your canvas diaphragm across the opening. The wood center should just pull the bungee tight without actually stretching them. The can top has basically two ridges on it. Using the 48in bungee secure the canvas below the second ridge.



Then fold the canvas up over then bungee into the can and secure the canvas with the ratcheting tie down strap between the first and second ridges. Do not over tighten or you may crush the can.



10. Cut off any excess canvas and attach a handle. I used a fog machine bracket and secured it with drywall screws. Then I coated the canvas with straight latex for good measure to make it more airtight.

Here's how we used a standard AirZooka last year. It was a last minute idea that paid off. The AirZooka was attached to the back of a wall with drywall screws and aimed through a hole. The hole turned into a cheesy monster mouth with Great Stuff foam, and was situated behind guests as they looked at some eye candy. Whomp, and they got blasted in the back. It worked extremely well for very little money.

Parts List

1 - 33 gallon galvanized metal garbage can.

1 - piece of painter's canvas 6ft square

1 - 12ft ratcheting tie down strap

Many, Many 1 1/2in drywall screws

1 - nut type link fastener

4 - eye bolts 1/4-20

2 - 1/4 in X 6in lag bolts for mounting the MegaZooka

6 - 1/4 in x 1.5in fender washers

12 - 1/4in lock washers

12 - 1/4in jam nuts

2 - 36in bungee straps

1 - 48in bungee strap

1 - eye screw 0-2 7/8

2 - 10in diameter wood circles cut from 1in thick wood

liquid latex

1 - handle (I used a fog machine bracket)

Duct Tape

Chip Brush for the latex

Liquid Nails

I may have missed something so use your best judgment.



Here's a photo of the MegaZooka
with the AirZooka for comparison.



This is a lousy photo of the smoke ring.

It shoots 30-40 feet really fast.

We had a hard time catching it on film.