



<http://www.spookyblue.com/fcg/index.html>

Flying Crank Ghost

Some FCG Background

If you've never heard of Doug Ferguson or the infamous Flying Crank Ghost, then you're not a true Halloweenie. Don't worry. You will be in a few minutes.

The flying crank ghost is a prop developed by special effects enthusiast Doug Ferguson. For the mechanically inclined, it can be a fun project to add to your Halloween haunt.

For the rest of us, it is the reason we're patching drywall holes in the garage shaped like hammers, a cordless drill, and various nails, screws, and bolts. Oh...and we need a new trash can after the old one got kicked into the street and run over by a cement mixer.

How (not) to build a Flying Crank Ghost



My brother and I kicked off our first flying crank ghost project by misinterpreting and completely confusing the plans we had on the subject. Unwilling to admit defeat (many times), we slogged on (for about a month) to build one of these contraptions. Here is our story ...

Some tell-tale signs of an FCG builder



Florescent paint under the fingernails

Likes to dissect electric rotisserie motors

Owens 1 or more styrofoam head wig-stands (with names)

Can be found rummaging through trash for "parts"

Genius with PVC pipe, like a clown making balloon animals

How does a flying crank ghost work?

At first inspection, the FCG contraption appears to run on carefully controlled chaos, ready to spin out of control at any moment. If SpookyBlue engineers had built your FCG in 2002, I wouldn't disagree with that description. However we've figured it out, and it's really a clever and simple mechanism.

A central 6RPM motor turns the crank arm. At the end of the arm is a vertical pin that suspends a free-spinning disk. Attached to holes in the disk are three strings (4 if using a counterweight) that attach to the marionette's arms and head. Notice how the disk always faces the same direction regardless of where it is in its rotation.

The movement of the crank alternately lifts each string as it moves along the course of its rotation. You can control the timing of your spook's rises and falls by adjusting the distance between the pulleys.

Move the arm pulleys far away from each other and you get a very exaggerated motion.

The Notorious Flying Crank Ghost Project

Mechanical Engineers build weapons. Civil Engineers build targets.

We based our flying crank ghost project on the misconception that 3/4" PVC pipe possessed the rigidity necessary to support the crank motor, arm assembly, and marionette.

Using 3/4" PVC piping, we constructed a the whole design. 4'x4' base and dual vertical supports. The entire contraption was about 7' tall, so we took the middle upright section out to work on the crank motor support and marionette arms. With the exception of the support arms, we scrapped



Note the pronounced droop in our uprights. Also note the attempt to counter said droop.

"Maybe if we lean it back far enough..."



Despite the overall failure of the PVC design, we were very happy with the range of motion afforded by the support arms, and migrated that section to our new design...for about 15 minutes before we scrapped them too.



Note the L-bracket supports zip-tied to the uprights.

I think these are in the laundry room now supporting a shelf.



To the optimist, the glass is half full. To the pessimist, the glass is half- empty. To the engineer, the glass is twice as big as it needs to be.

I don't know what that says about this project, but there's some correlation there if you dig for it.

Mounting the crank motor
(Note expression on the right)

I'm a programmer. My brother works for a bank. Perhaps this explains the engineering genius behind our temporary support structure (right).

The main problem we had with our otherwise brilliantly conceived plan was that it was utterly doomed. This pipe size simply cannot support that much weight. It was never in danger of breaking, but it quivered and bobbed more than Anna Nicole Smith.

My brother realized that for the project to succeed we had to rebuild the scaffold out of something a little more substantial. It was time for a road trip to Home Depot to buy some 2x4's.





Our whatsits hang from string we threaded through three eyebolts. (Whatsits are more commonly known as pulleys) Believe it or not, we were actually able to successfully test the motor and pulleys.

Our basic premise was sound. Our choice of materials was...unfortunate. But that was all soon to change.

We weren't about to shovel out \$60.00 for a Dayton Industrial Gear Motor.

Instead, we sniped some old electric rotisserie motors from Ebay. Using a grinder, we cut a steel skewer down to manageable size and JB Welded it into the removable sleeve that fits on the shaft.



Some old particle board makes a great surface on which to mount our way-cheap 6RPM motor.

Sage Advice

Measure your crank arm before you attach it to the motor shaft to make sure it won't hit your support structure. We did that.

Also (and this is important) make sure your arm is shorter than the distance between the motor and the pulley that supports the head of the marionette.

It's vital to the well-being of your ghost that the crank arm not touch any of the pulleys during operation.

Trust us on this one.



A large metal plate turned out to be a better solution than this particle board after it contributed to the unfortunate FGCide upon it's first test run.

Some ingenious engineering by my brother married a 3' long wooden dowel to our metal rotisserie shaft at 90°.

Rumor has it that he was heard to mutter something about this wedding being only slightly less painful than his own. This rumor is unequivocally NOT true.*

We used some particle board for the first version of the...doohickey that hangs from the crank arm to which the strings are attached.



Desperation construction turned a wobbly PVC skeleton into a heavy-duty gallows you could do chin-ups from.

Using coat hangers and the usual styrofoam head (which we accidentally melted), Joe hung up the marionette for a test run.

I wasn't there personally to witness the event. However, before the FCG committed suicide, it's disturbingly evocative motion was described by my brother as, "someone trying to scratch the middle of his own back. Underwater."

Pictured at right is the result of the first test. How Joe kept from tying the thing to the bumper of the Explorer and taking it for a trip down the street is beyond me.



Total running time before the FCG committed suicide:
14 minutes



After cheerfully cutting away three feet of knotted string from the crank arm and pulley system, Joe began weighing his options.

1. Load the thing up in the truck and dump it in brother Bill's driveway.
2. Drink until November rolls around.
3. Drink until the styrofoam head has some ideas.



We used a plastic hanger for the torso, to which we attached the arms and head. This gave the arms a wide range of motion without binding at the shoulders.

We also added a "neck" to prevent "Sarah" from looking like an interested dog with her head cocked sideways each time an arm lifted.



Independence of the head from the shoulders is a good thing as long as it's not taken to the extreme.

The French understand this.

The Counter-Weight



If your FCG suffers from involuntary muscle spasms, then consider adding a counter-weight to calm her down.

A counter-weight is usually employed to assist the motor in lifting the marionette. Our beefy rotisserie had no trouble lifting. Lowering was another matter.

Project Completed!



Despite ourselves, we completed our flying crank ghost Sarah in a little over a month. You can imagine the pride we felt as we watched our pretty, spooky girl rise into the air on her maiden flight under the black lights.

We flipped on the motor and hit the lights. Stunned silence ensued. We figured she'd spin out of control and catch fire. Instead, she rose into the air, gracefully tilted her head to the right, and came back down without incident.



Sarah has completed this cycle at least a zillion times in the two nights she's been running.

It's very early in the season yet, but already it's become a circus at night as people drive by, then turn around and drive by the other direction.

