http://www.phantasmechanics.com/grimorg.html

The Grim Organist: An Experimental Animatronic

Note: For those of you who are building an organist of any kind, reasonably priced keyboards and organ cabinets can be had by contacting Ryan Meldahl at meldahlr@yahoo.com. Be sure to tell him that we sent you.

Cautionary Remarks

We recommend this project for experienced prop builders only. Try your hand at the FCG before attempting to work with the information presented in this article. *You will be doing a good bit of experimentation if you decide to attempt this project, and we cannot promise automatic success. Caveat emptor!*

The dimensions shown are approximate, as we have not had time to construct a figure to use as a prototype. The images you will see below have been modified by a prospective builder, and reflect the results of his experiments. (To our knowledge, this builder never completed the project. Will *you* be the first to build a working model?) Be sure to check your armature as you build. You may need to adjust positions of parts to conform to your version of the figure. If you encounter problems, be sure to contact us and explain the trouble you are having.

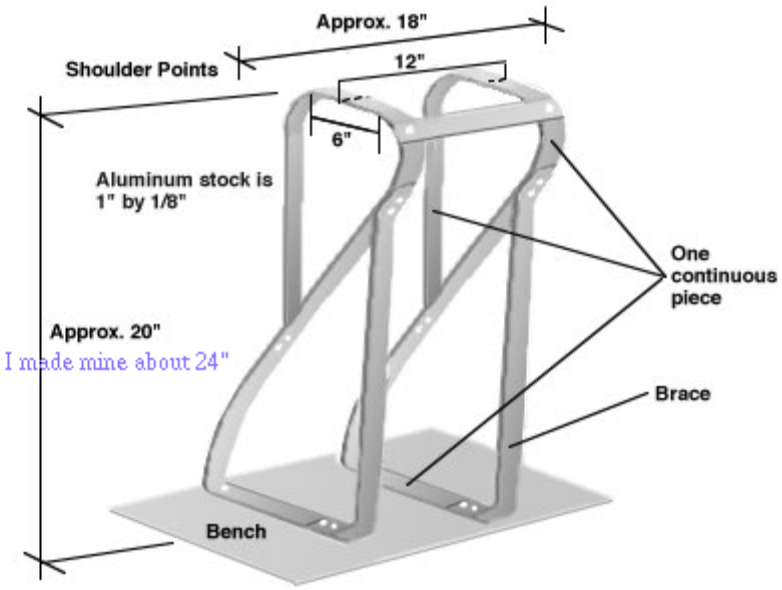
The Grim Organist

Illustration Set 1

Determine all dimensions in advance, based upon your needs.

Step 1

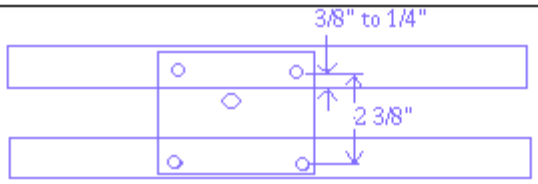
Flat Aluminum stock, available at hardware store. Attach bracing as shown with bolts, nuts and lockwashers. Attach frame to bench with wood screws.

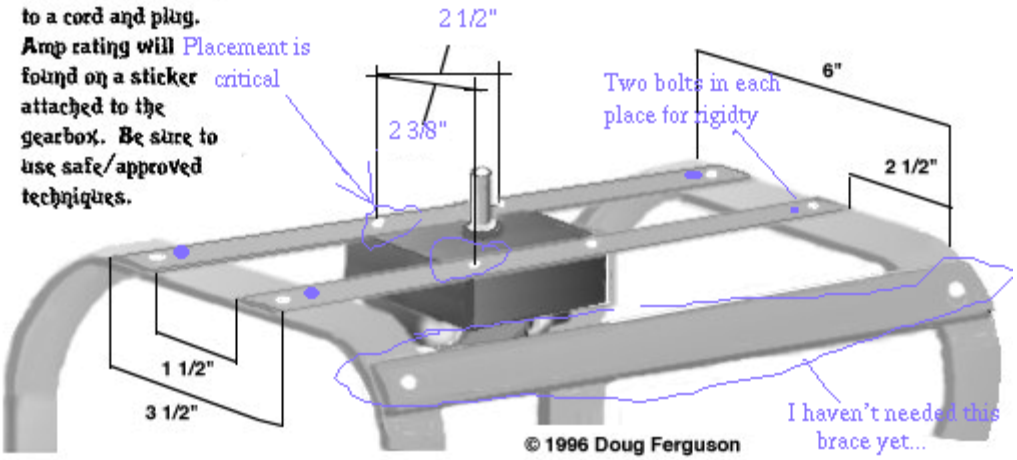


Armature

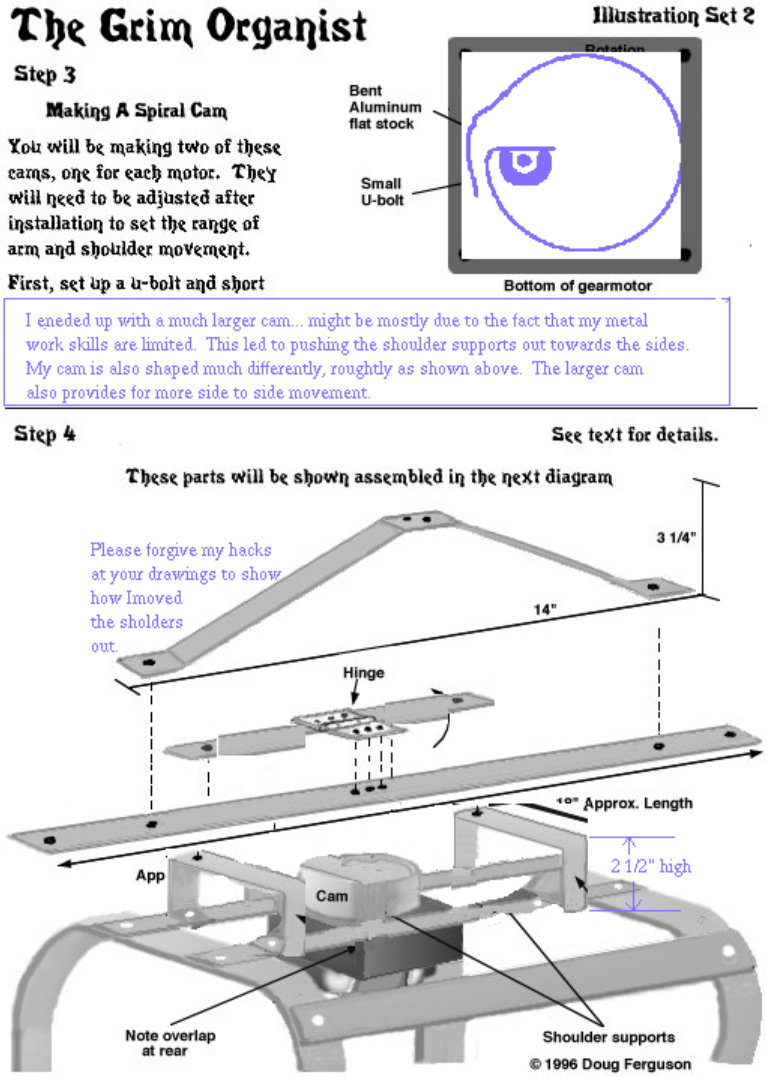
Step 2

Install the neck motor as shown. The suggested motor will have bare electrical leads, which require wiring to a cord and plug. Amp rating will be found on a sticker attached to the gearbox. Be sure to use safe/approved techniques.





Step 1



The frame shown in this step constitutes the upper body of the figure. It should be attached to a base as shown, and the base should be massive enough to support its weight such that it does not tip while in operation.

The final form of the figure is actually up to you. I do not include plans for legs, feet, or a face. The upper body is intended as a drapery frame, and the final look of that drapery is determined by the cowl frame shown in Step 7.

The figure is hooded, looking much like the 'grim reaper'. Not only does this approach make construction simpler, it also provides a more mysterious look for the character. He need not have a face at all.

It is also up to you to provide an organ mock-up. Design the figure so that it can reach the keyboard.

Step 2

This stage is fairly self-explanatory. This animatronic requires two of the Dayton 2Z805 (2 RPM) or 2Z806 (6 RPM) gear motors used for our other projects. The choice of speed is up to you.

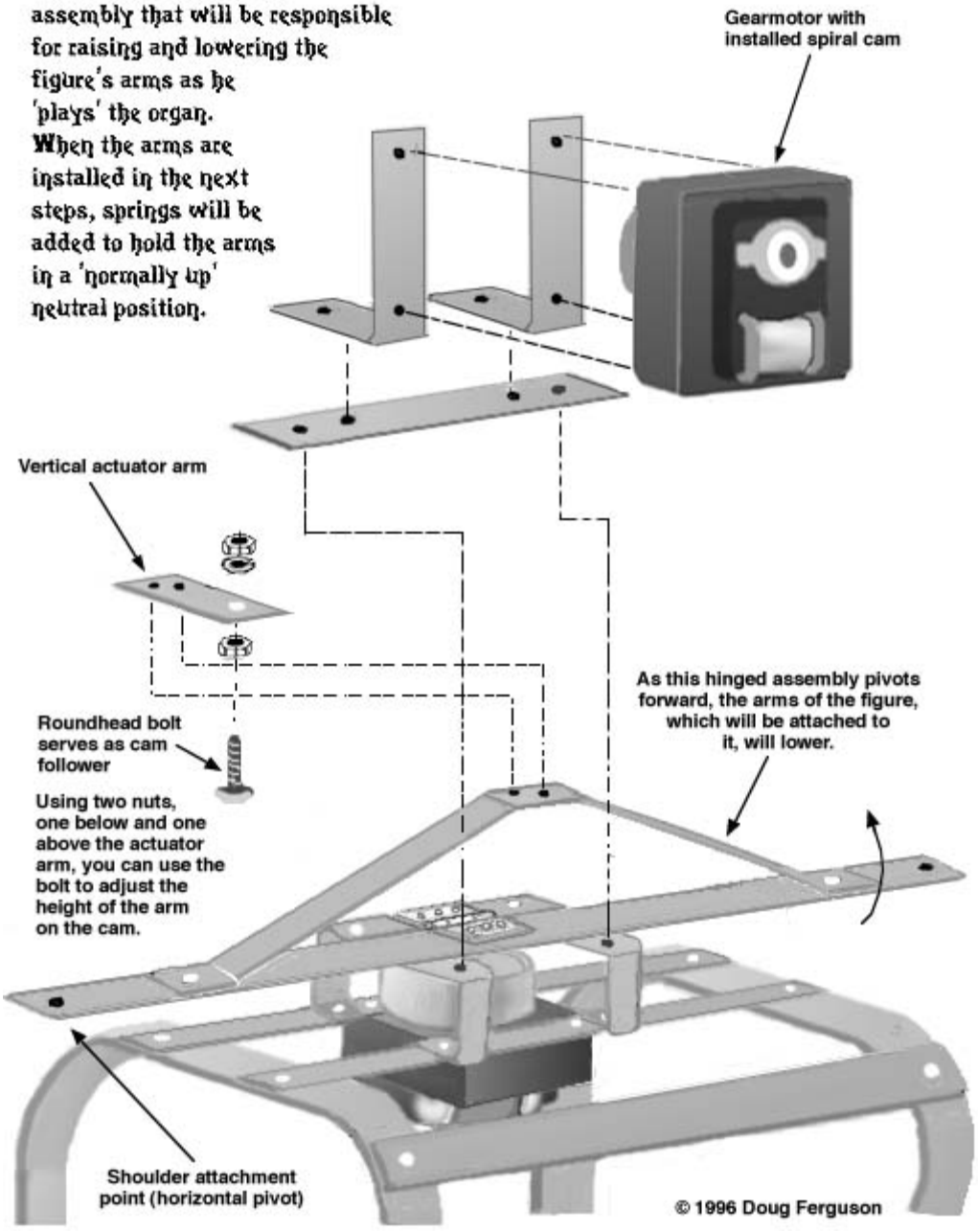
The Grim Organist

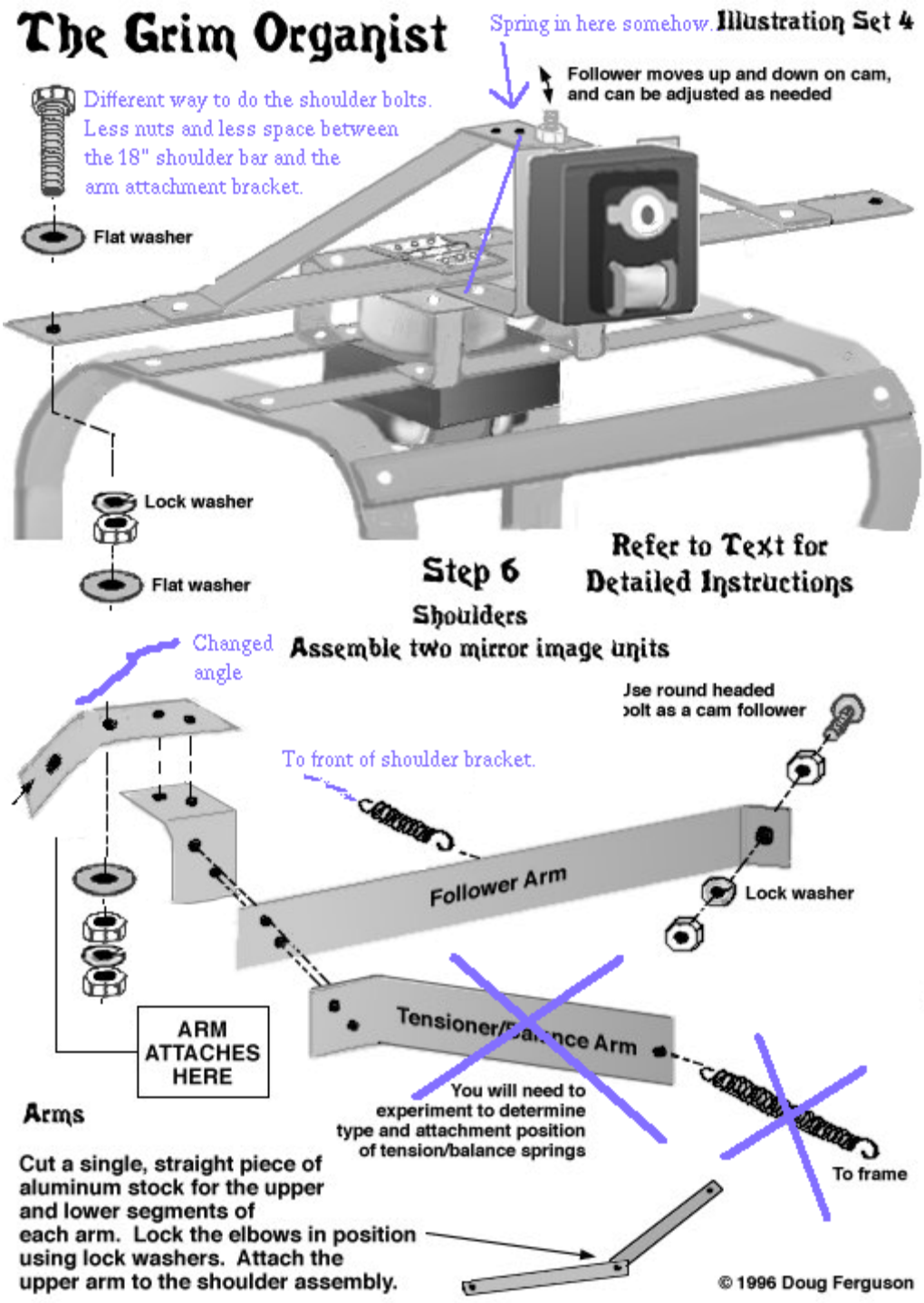
Illustration Set 3

Step 5

See text for details

This step completes the assembly that will be responsible for raising and lowering the figure's arms as he 'plays' the organ. When the arms are installed in the next steps, springs will be added to hold the arms in a 'normally up' neutral position.





Steps 3, 4, 5 and 6:

The 'spiral cam' suggested would be a very inexpensive alternative to a flat sheet metal cam. One advantage of this design is that the cam can be adjusted by the user while it

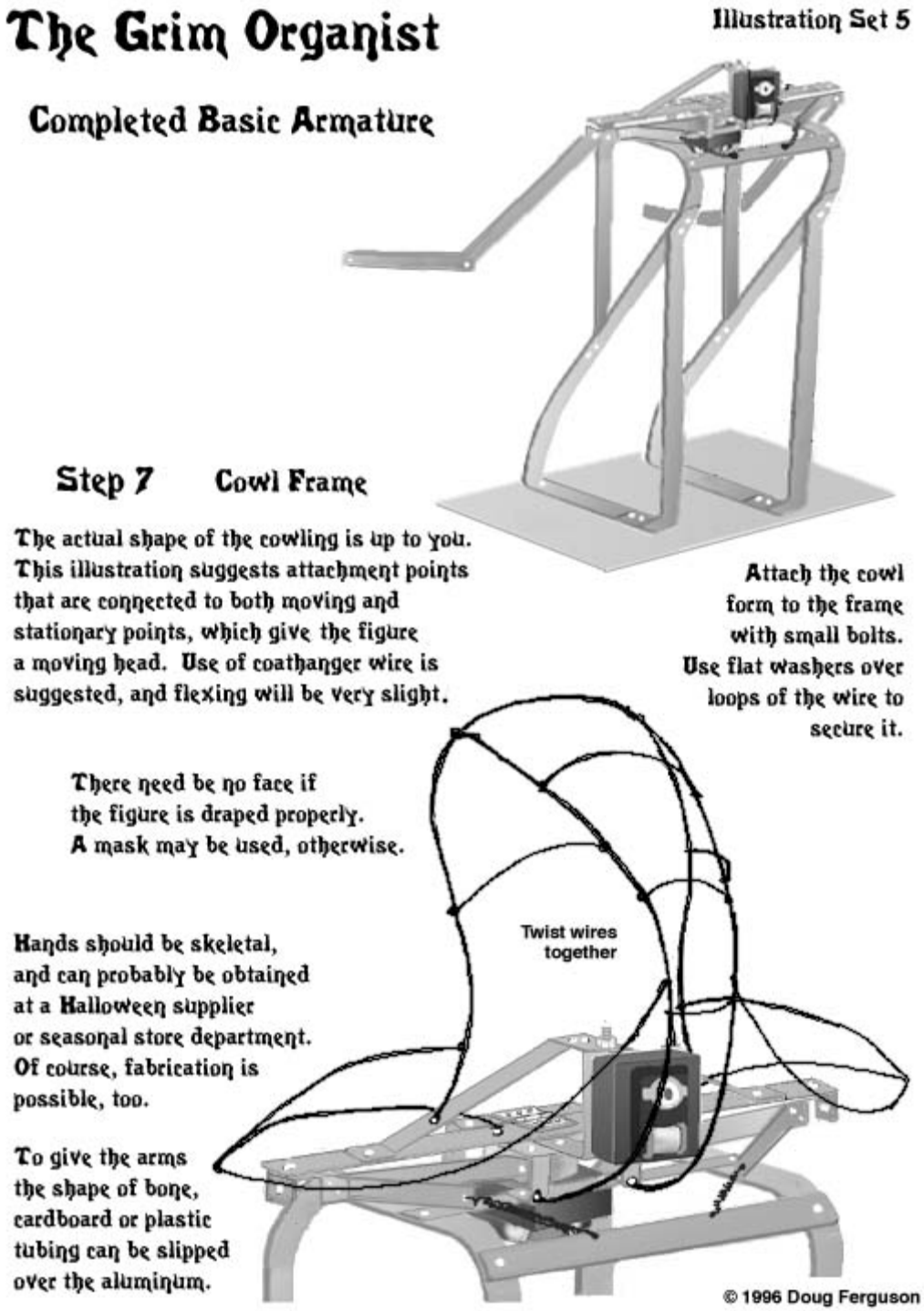
is in place in the mechanism. If you don't like the range of movement, distort the cam until you do. It can also be made with multiple lumps and deformities to add complexity to the movement.

Be sure that the end of the spiral is bent downward toward the gearbox shaft to provide a smoother transition for the follower head. It is at this point that a sudden motion will occur in the linkage, and it can be a very positive addition to the figure's action.

Be sure to take the time to play with the first cam you install before you proceed to the next major assembly. Make sure everything works smoothly.

The follower heads for the arms' horizontal movement (which you install in Step 6) should track their cam over a fairly wide range of movement of the hinged assembly without slipping off the edge. Make adjustments here as necessary. The 'horizontal arm movement cam' should be the one with the widest range of diameters, as you want the figure to move its hands up and down the keyboard.

Instead of the followers shown, it has been suggested to us that a much better alternative would be a type of kitchen cabinet door latch hardware that features a small nylon roller mounted to a bracket. These would be attached to the follower arms in lieu of the round-top bolts, and the nylon wheel would then ride on the cam.



Step 7:

The cowl form consists of sections of coat hanger wire twisted together, as shown. Use pliers for this, and wear gloves while working on it. Make small loops in the wire at the

points where it attaches to the aluminum stock. This can be done by twisting the wire around the bolt that is to hold it. Use a flat washer beneath the head of the bolt to assure a good grip on the wire, and if necessary, add a lock washer above it. When the frame is attached, you can shape it as you wish by hand.

Be sure to test run your completed figure for at least an hour before you place it in your Haunt. Check for hot spots on the drapery. If the mechanism hangs, determine the cause and correct it. I know we have said this before, but *be safe.*
