THE BUSY LITTLE ENGINE™

Grampa Pig's *Busy Little Engine* Halloween costume

costs less than $10 and takes less than an hour to make!

In 2007, a boy named Connor told his grandfather that he wanted to be *The Busy Little Engine* for Halloween. Connor's grandfather Larry wrote to us asking if we knew anyone who made a Busy Little Engine costume. We have not licensed a Busy Little Engine costume, but we thought free plans for making one would be a great idea. So we asked Grampa Pig if he thought he might be able to come up with a simple, quick, inexpensive design that anyone could download and use. Grampa Pig loves a good challenge, and he came up with a great design that is easy and quick to make, inexpensive, sturdy, and looks great!

Young children can help assemble this costume, but they should not handle the sharp instruments required for cutting the materials. Please be careful!

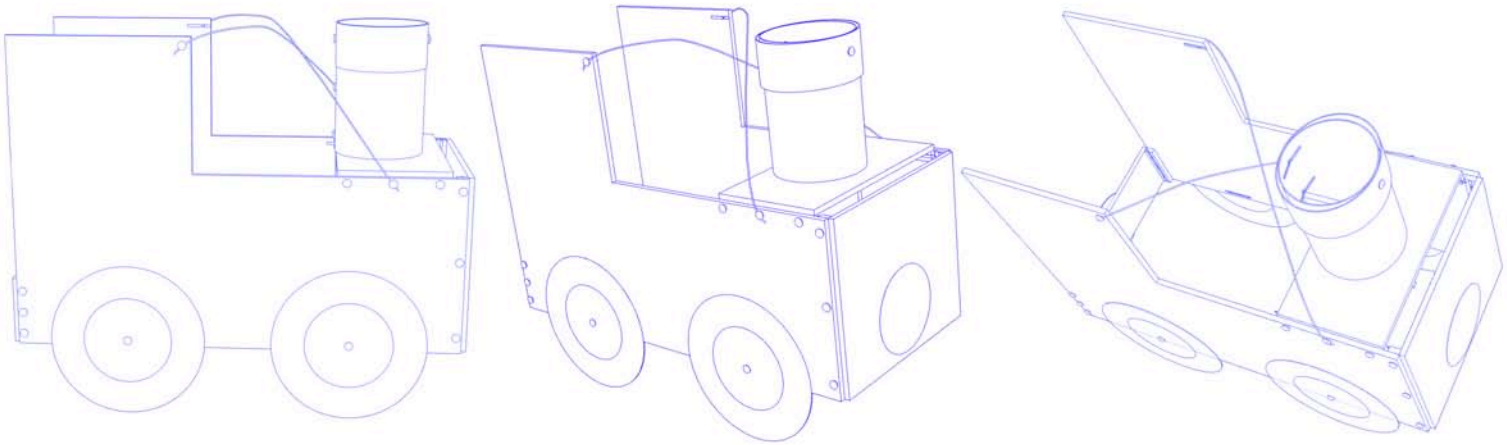
Things you may need to buy*:

One sheet 20" x 30" black foamboard
One sheet 14" x 22" red posterboard
24 brass fasteners

**These materials are available at office supply and craft stores all over North America. Alternately, you may substitute corrugated cardboard for the foamboard, heavy paper for the posterboard, and glue or tape for the fasteners. In addition, 7" red plastic disposable plates can be used for quick-and-easy wheels.*

Things you probably have at home:

Sharp utility knife or hobby knife
scrap cardboard "work surface" for cutting
8" x 12" sheet of aluminum foil
Two 24" long pieces of string



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Cutting things out:

Measure and cut the foamboard and posterboard to the dimensions on the two plan pages. Make cuts only where the plans show black lines. The gray lines in the *Front*, *Top*, and *Back* pieces on the first plan page are places to score the material. The score lines (marked in gray) should be 1/2" from the edges. This is not a critical measurement, but you need enough width to make a secure attachment with the fasteners. If you use foamboard or corrugated cardboard, you only want to cut through the front surface at these places to make a "hinge" of the back surface. This allows the edges of those pieces to bend back for attachment to the sides.

The blue circles on the second plan page are outlines of the wheels. The easiest way to cut the wheels is to cut out four 7" x 7" squares as indicated on the plan, then stack the four squares and poke a hole through the center of all of them at the same time. If you put a brass fastener in the hole, you can hold all four pieces together and cut them into circles all at the same time. A circle can be traced from a 7" paper plate or similar sized round thing (a big can, an upside-down bowl, etc.). Keep in mind that the circles don't need to be perfect and that you can simply "eyeball it" and cut them freehand.

Getting the parts ready to assemble:

In developing these instructions, Grampa discovered that it is very helpful to mark the pieces of black foamboard so you know which piece is which, which part of the piece is the outside, and which end is up. You can use a pencil to make simple notes on the insides of the pieces. By marking on the inside, the marks will never be noticed once the costume is complete. A simple arrow pointing up and the name of the piece ("side", "top", "front", etc.) should do the trick nicely. You'll know it's the inside of the piece and not the outside because you made all your marks on the inside! Why mark the pieces? So you can match them up the same way on your work suface as when you do the final assembly. *This is the whole secret to putting the costume together easily!* (Shhh! Don't tell anyone!)

By matching up the pieces on your work surface before assembling things, you can make holes for the fasteners and, at the same time, be sure everything will fit together perfectly without having to make any precise measurements. Here's how to do it: Before you assemble anything, match up the pieces that attach to each other, two at a time. For example, lay the *Front* piece down on your cardboard work surface and then match-up one of the *Side* pieces as it will be when the costume is assembled. The *Side* piece(s) will overlap the 1/2" wide section of the *Front* that you scored to bend back for attachment. Match them up as they will be in the finished costume. Then, using a "small pokey thing" such as a jeweler's screwdriver or an old-fashioned letter opener, poke holes for the fasteners *through both the Side and the Front at the same time*. That way, all the holes you poke will line up perfectly for final assembly! The red marks on the plan pages indicate where holes should be poked for the fasteners — about 1/4" from the edge. Grampa Pig purposely did not make marks in the plans on the *Front*, *Top*, and *Back* pieces because he didn't want anyone to think those holes should be poked *separately*. The *Front*, *Top*, and *Back* pieces all have their holes positioned and poked-through as part of poking the corresponding holes through the *Sides*.

The holes you poke for the wheels and for the top attachment point of the "suspender" strings do not need to match up precisely with anything else, so you can just "eyeball" those. The front wheel fastener holes should be about 5" from the front of each *Side* piece. Likewise, the rear wheel fastener holes should be about 5" from the rear of each *Side* piece. Like all the other fastener holes, they should be about 1/4" from the edge of the material.

To make the funnel fit its support piece snugly, first poke three fastener holes in one end of the *Funnel* piece. Then, wrap the *Funnel* piece snugly (but not tightly) around the black foamboard *Funnel Support* and poke fastener holes in the other end of the *Funnel* piece (the end indicated by the gray shading on the plan page). It can be easier to simply *mark* the hole positions while you're holding things in place on the *Funnel Support* and then lay the *Funnel* piece flat to actually poke the holes. As shown on the plan, the fastener holes on the other end of the *Funnel* piece (the gray-shaded end) will end up being almost 2" from the edge. Finally, poke a

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fastener about half-way between the two holes that will fasten the top of the *Funnel*. This doesn't need to be precise — just try to get it about half-way between, and in-line with the other fastener holes. The fastener that goes in that hole will help support the *Funnel Top*. The *Funnel Top* is bigger around than the funnel itself, so just poke a fastener hole in each end and one in the middle as indicated on the plan. The fastener hole in the middle of the the length of the *Funnel Top* helps support the *Funnel Top* so it doesn't sag.

While we're working on the funnel, this is a good time to fit the black foamboard *Funnel Support* piece to the black foamboard *Top* piece. Cut 2" long notches in the *Funnel Support* and the *Top* pieces. The notches should be about 1/8" wide or less. Again, precision is not important, we just want the pieces to fit together snugly. After cutting the notches, fit the pieces together like a "+". The entire width of the Funnel Support will fit into the Top piece. There will be about an inch of space on the Top in front of the Funnel Support because the funnel is not at the very front of Busy Little Engine, it is set back a little bit.

Here's a quick way to make the foil pieces for the centers of the wheels and for the "magnets" on the front and the back: Take an 8" x 12" piece of aluminum foil and fold it in half lengthwise (so it's now 4" x 12"). Then fold it in thirds (so it's now 4" x 4"). Now you have six layers of aluminum foil in one neat pile. Now cut the pile into a circle. You can either "eyeball" it or first trace a 4" diameter circle on the top. Once you've cut the foil, you will have six matching circles for the wheel centers and magnets! Tape or glue them in place. If you put them on after you have fastened the red wheels to the black sides then the foil will cover the fasteners for a tidier appearance.

Final Assembly (the funnest part!):

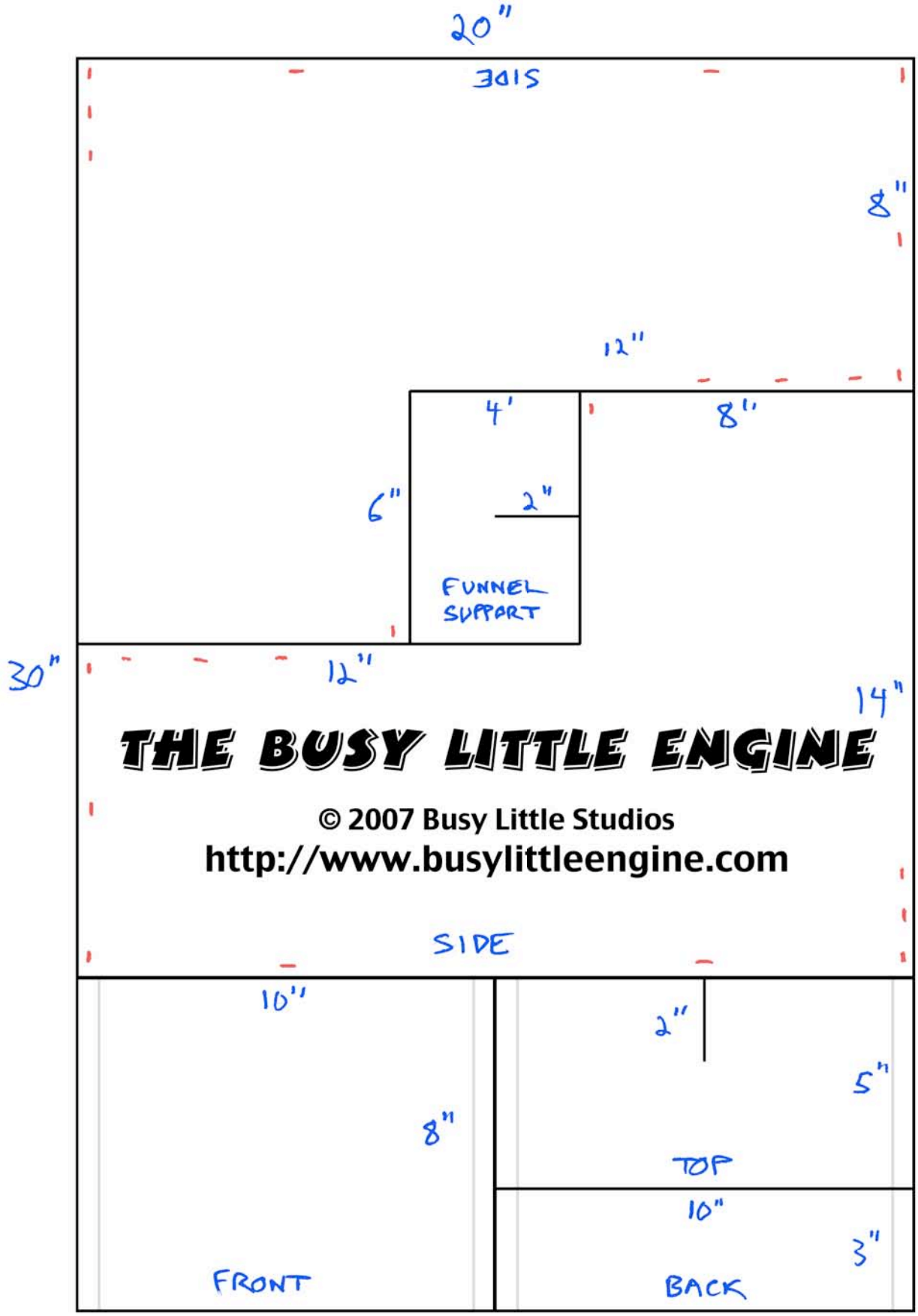
Now is a perfect time to get your little engineer involved if you'd like. From this point on, assembly is very kid-safe and kid-friendly.

The particular order or way you assemble things is not important, — you can do it any way you please. One idea for keeping things simple is to lay the pieces flat on your work surface and match them up again like you did when you poked the fastener holes. Match the pieces up and then fit fasteners through the holes. Bend the "legs" of the fasteners to hold the pieces together (they are sort of like big staples!). Occasionally, when the costume is being used, a fastener leg can snag on a piece of the child's clothing. This normally will not cause any scratch or cut, or tear of clothing, but it can be a small bother — for some children more than others. If you are concerned about this, you can use packing tape or even scotch tape to hold the fastener legs in place to prevent any possible snagging.

Attaching the "suspender" strings:

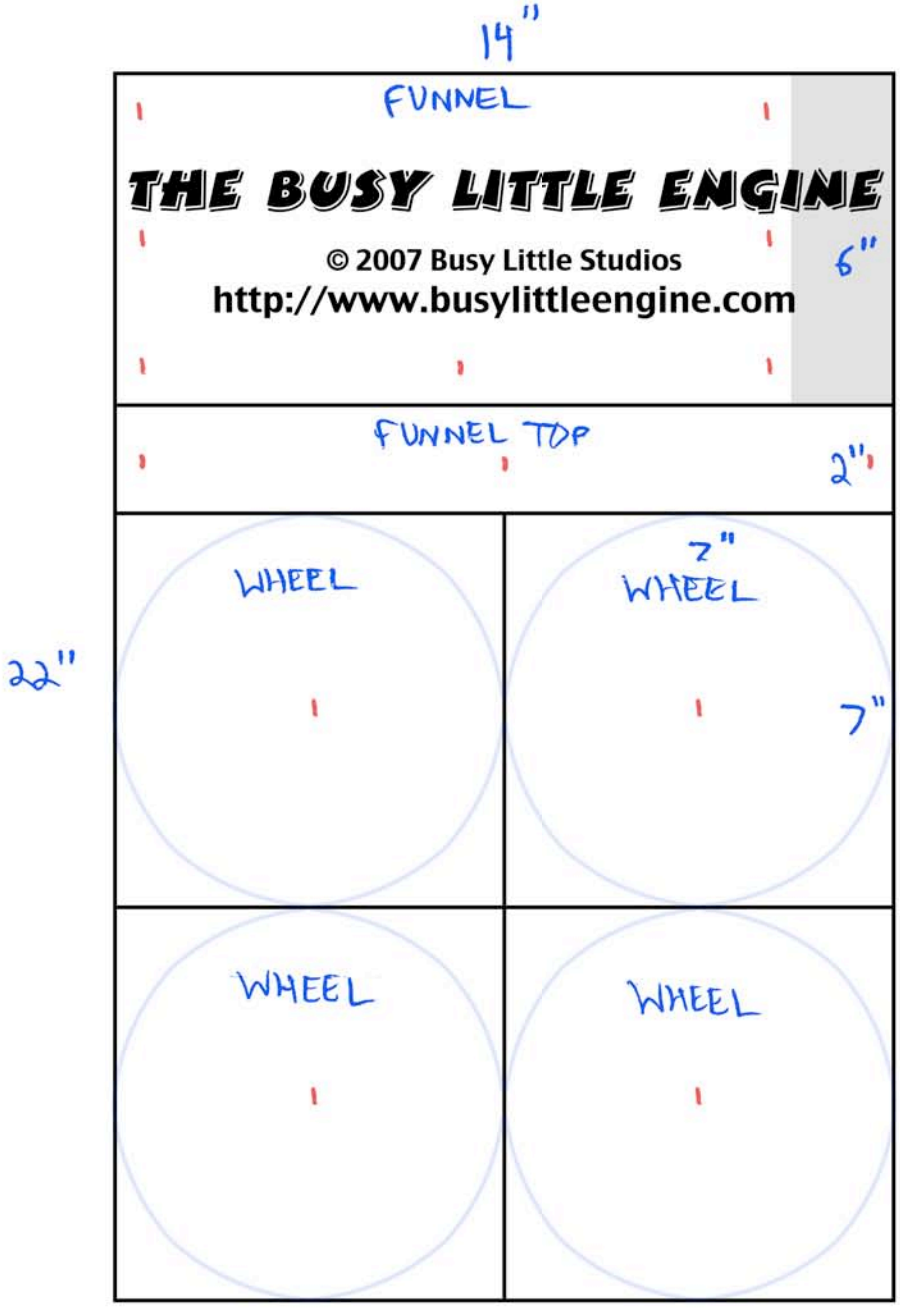
Attaching the strings is quite easy. In addition, they will remain completely adjustable for a comfortable fit. When the costume is being worn, the strings lead from the top attachment points to the child's shoulders, then down across the child's chest to the lower attachment points. (The strings criss-cross each other in front of the child.) If you have already put fasteners in the top string attachment points (the top corners of Busy Little Engine's cab), you can simply bend the fastener legs straight again and slip the fasteners out. With the fastener out, slide one end of the string between the two legs of the fastener and push it up to the head of the fastener. When you put the fastener in place on the costume, the string will be held tight between the head of the fastener and the body of the costume. You can adjust the length of the string if necessary by simply loosening and then re-fitting the fastener. The lower attachment points for the strings are the middle fasteners on each side of the *Top* piece. Slip those fasteners back out and insert the string as described above. Then re-fit the fasteners and you're done!

For plans, pictures and more fun stuff, see http://www.busylittleengine.com/activities/activities.html



One sheet 20” x 30” black foamboard

(see http://www.busylittleengine.com/activities/activities.html for instructions, pictures and more!)



One sheet 14” x 22” red posterboard

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