

Building a Quintain

Designed by Marco Solario of Calfia, Caid

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Materials Needed:

Two (2) 4" X 4" 6ft lengths

You can pick up (2) 4" X 4" X 8' and cut them down to 6' or purchase a 4" X 4" X 12' and cut it in half. The measurements of these posts are not crucial, but should be close. One of them will be drilled at the center, so an accurate cut will make finding the center much easier.

Six (6) 2" X 4" 8 ft lengths

I recommend kiln dried wood for this as it will reduce weight and reduce the possibility of splitting as the wood dries.

Using green wood is okay, but these factors should be considered in determining the life expectancy and use.

One (1) 1/2" X 36" Cold rolled steel round stock

One (1) 3 3/8" length of 1/2" EMT (electrical conduit)

One (1) Bottle of carpenters glue (Wood glue)

One (1) 1lb box of 2 1/2" #8 exterior deck screws (I usually end up with about 6-10 left over)

One (1) Quart of stain/wood sealant

Two (2) 10" X 8" pieces of (1/2 inch minimum thickness) plywood for target shields.

Recommended Tools:

Skill saw, power miter saw, or equivalent

Drill (half inch chuck suggested)

Measuring Tape

Pencil or pen for marking wood

1/2" X 24" bellhanger style drill bit for coring the end of the upright post

For embedding bar stock in the end of the upright

I also recommend a 3/8" X 24" bellhanger style drill bit for making a pilot hole to allow for correction of your angles. It is fairly crucial for this hole to be straight.

1/8" drill bit for making pilot holes for screws

While not required, pilot holes reduce the risk of splitting the wood when screwing the pieces together

3/4" drill bit for drilling pivot hole in the arm

Phillips Screwdriver or Screwdriver bit for drill

If you are using a screwdriver bit in a drill, I recommend one with a sleeve to prevent the drill from slipping off the screw and damaging the wood or yourself

Hand held belt sander (recommend 80-120 grit sand paper)

Sanding the wood before assembly will open the pores in the wood for the stain/sealant to sink into improving the weather resiliency of the finished product. It is also much more difficult to sand in the nooks and crannies once the pieces are assembled. Be careful not to sand too heavily as this will change the dimensions of the wood, which could affect the end measurements

Table-top belt sander

A hand held can be used, but a table-top style can make cleaning up the ends of your cuts quicker and easier.

Metal file for smoothing edge of round bar stock

8" "C" Clamp

Sponge style brush for applying stain

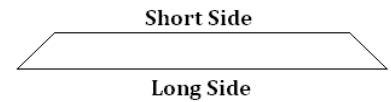
Safety glasses or goggles and ear plugs for your safety

Construction

Cuts for 2" X 4" wood

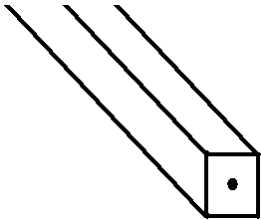
All pieces with 45° bevels measured on long side

- Two (2) 6 foot (optional 45° bevel on both ends of 1. These optional bevels are purely for looks.)
- Two (2) 34-1/8 inch
- Two (2) 31-1/16 inch (optional 45° bevel on one end of each. These optional bevels are purely for looks)
- Four (4) 24 inch with 45° bevel on each end
- Two (2) 18-3/8 inch
- Two (2) 16-7/8 inch
- Two (2) 6-3/4 inch
- Six (6) 5-1/4 inch



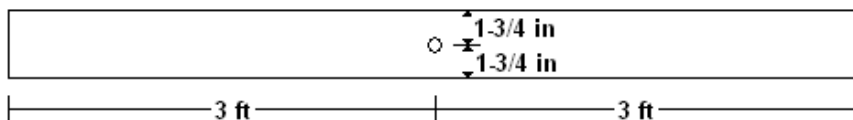
* Note * If you are not familiar with wood measurements, be advised that what is referred to as 2" X 4" is actually 1 1/2" X 3 1/2" and 4" X 4" is actually 3 1/2" X 3 1/2". The wood is originally cut to exact measurement and is then shaved 1/4" from each side. All the measurements utilized in these instructions take these shaved dimensions into consideration.

Upright



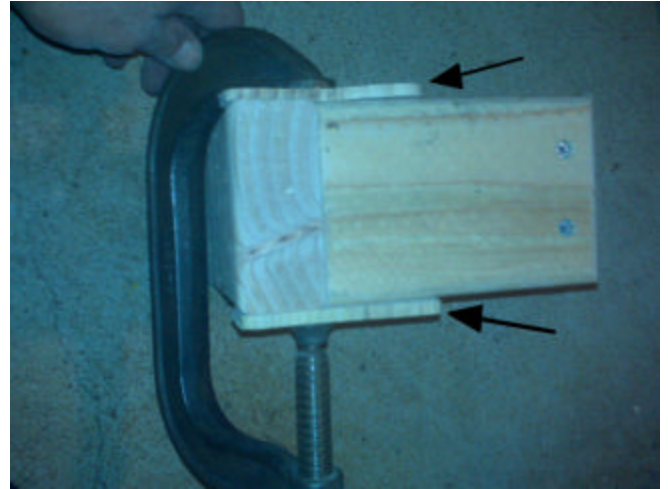
On one end of one of the 4" X 4" X 6' posts, drill a hole in the center of the post 1/2 inch in diameter by 24 inches deep. I recommend drilling a 3/8 inch diameter pilot hole 24 inches deep first in case you need to correct your angle or placement. If you do not have a 24 inch long 1/2 inch diameter drill bit available to you, you could take the post to a carpentry or machine shop in your area to have the hole drilled for you. This hole is going to house the pivot point for the quintain arm, so it needs to be straight or your arm will not spin as well. Fill the hole about 1/4 to 1/3 full with carpenters glue (Wood Glue). Insert the 1/2 inch diameter X 36 inch long steel bar into the hole and pound in with a hammer as far as it will go. You may get some glue seepage out the top of the hole or out the side of the post if there are cracks. Use a rag to wipe away any excess. Cut the end of the bar off leaving about 6 inches of metal exposed above the top of the post. Use a metal file or equivalent to round the edges of the spike to keep people from cutting themselves on it and to make it easier to install the arm. Let the glue set for 24 hours before attempting to use.

Quintain Arm



In the center of the remaining 4" X 4" X 6' post, drill a 3/4 inch hole all the way through. Make sure the hole is centered and straight. Line the inside of the hole with carpenters glue. Insert 3-3/8 inch piece of EMT into hole, insuring it does not protrude from either side. Wipe away excess glue with a rag. Allow glue to dry for 24 hours.

Assembling the First base assembly



Attach 4 of the 5-1/4 inch pieces in a square: butt-end to side-end. I've found that using a "C" clamp to hold the pieces together until you get the screws in, can be helpful. I use slivers of wood between the clamp and the project pieces to keep from scarring the pieces and to make the clamp grip more effective.

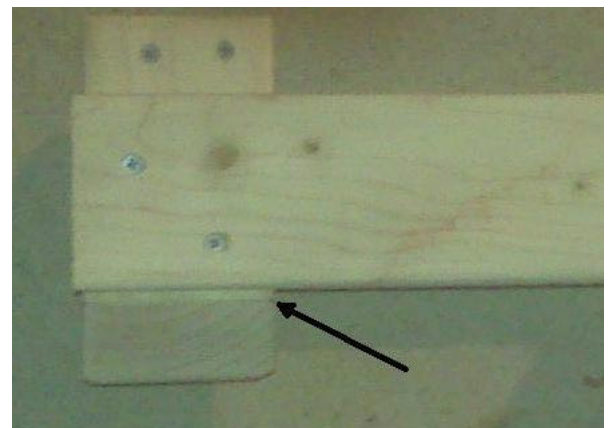


Attach the two remaining 5-1/4 inch pieces and the two 6-3/4 inch pieces in a similar fashion allowing the longer pieces to extend beyond the shorter ones (the shorter ones will butt-up to the longer ones 1-1/2 inch from the end.)



Attach each of the boxes to opposing ends of the two 16-7/8 inch pieces, centering the 16-7/8 inch pieces on the side of each box and lining up the ends of the long pieces with the top of one box and the bottom of the other. Note that the hole in the center of each box is slightly larger than the width of the 2" X 4", so you do not want the seam of the box side to line up evenly with the edge of the 2" X 4"

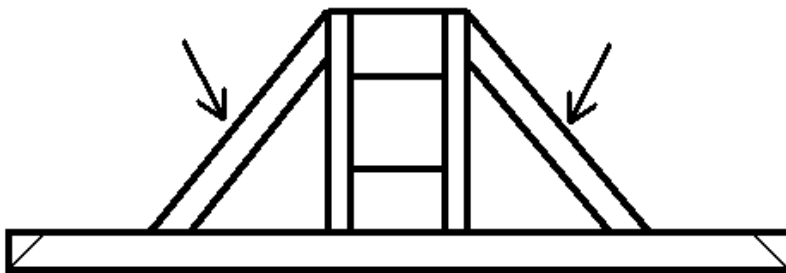
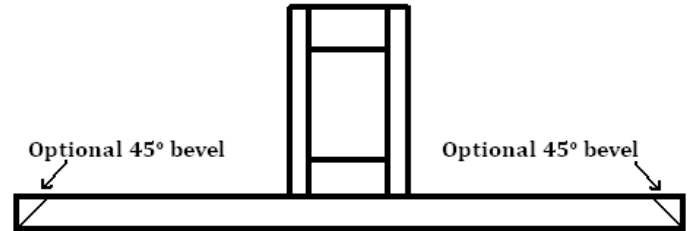
Also note that the box with the 2 protruding 2" X 4" pieces should be oriented with the protrusions facing away from the 16-7/8 inch piece.



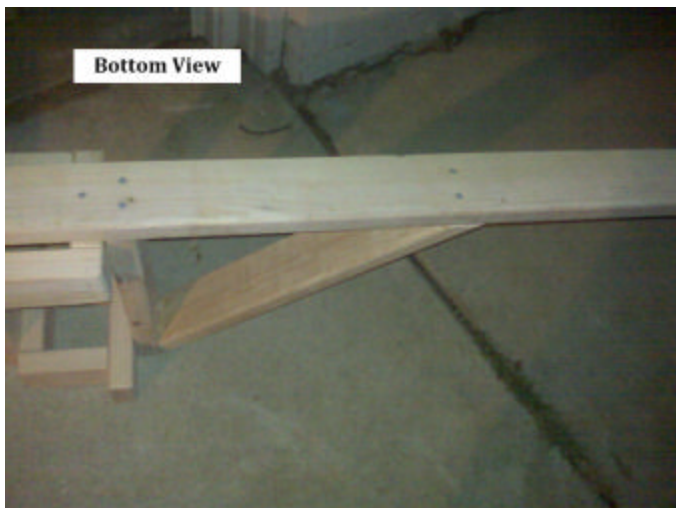
Bottom View



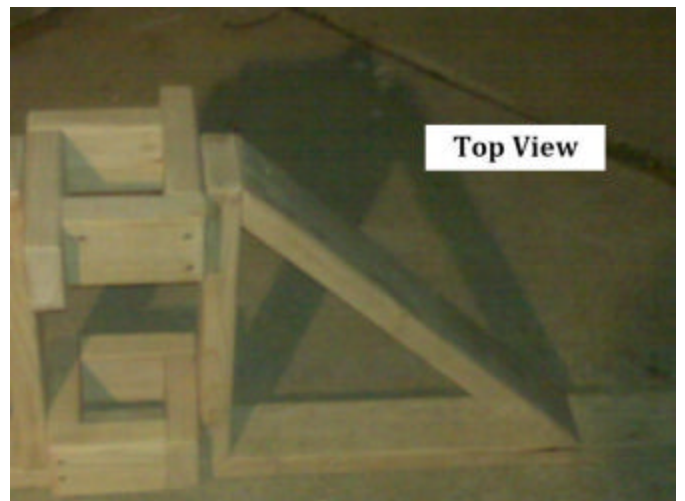
Attach the assembled piece to the center of one of the 6 foot pieces orienting the box with the protruding 2" X 4" opposite the 6 foot piece. (If you opted for the 45° bevels on one of them, you would use that piece here with the box assembly on the shorter side.)



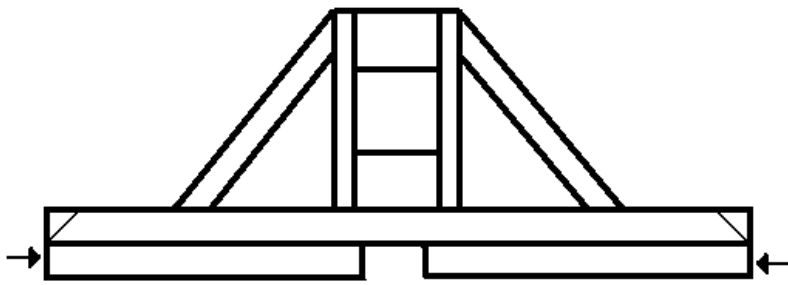
Attach the two 24 inch pieces with 45° bevels from the top edge of the 16-7/8 inch upright to the 6 foot base piece as shown.



Bottom View



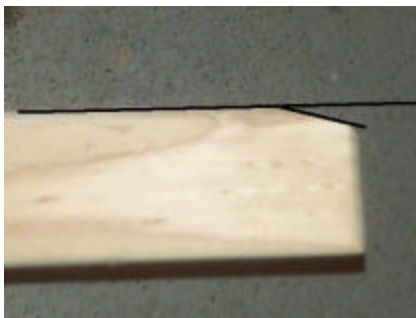
Top View



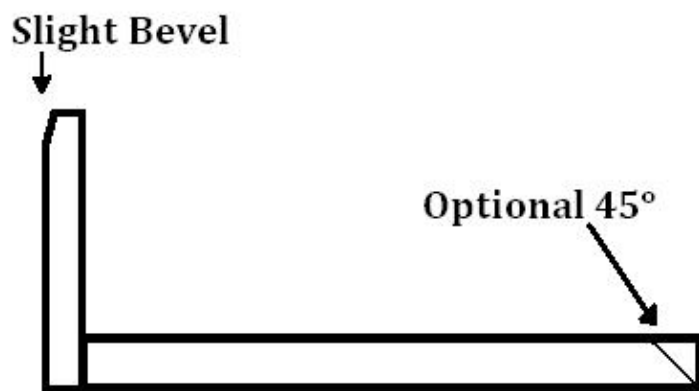
Attach the two 34-1/8 inch pieces to the bottom of the 6 foot base piece, aligning ends of the 34-1/8 inch pieces with the ends of the 6 foot base, leaving a 3-3/4" gap in-between. This gap will be where the Second base assembly will interlock with this one. The First base assembly is now complete.



Assembling the Second base assembly



Using a belt sander or possibly a wood file if available, create a slight bevel on the wide side of one end of each of the 18-3/8 inch pieces as shown. This will make fitting the two base assemblies together a little easier.



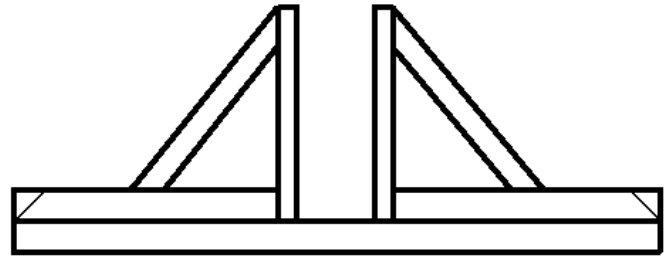
Attach the square end of the 18-3/8 inch piece perpendicular to the square end of the 31-1/16 inch piece with the slight bevel made in the previous step facing away from the 31-1/16 inch piece as shown. (If you opted for the 45° bevels on these pieces, the 45° angle will face up). Repeat this process for the other 18-3/8 inch piece and the other 31-1/16 inch piece.



Attach one of the remaining 24 inch pieces with the 45° bevels to the side of the 18-3/8 inch piece as shown, leaving the bottom end unattached. Repeat this for the other identical assembly.

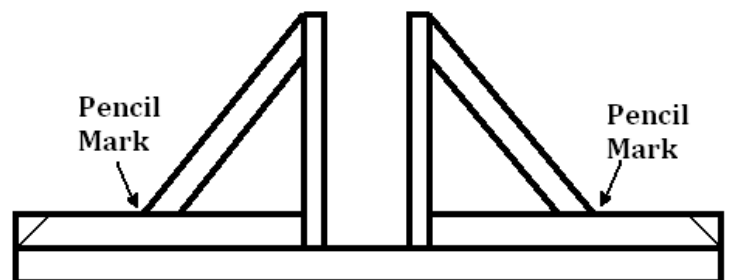


Temporarily attach the two newly created assemblies to the remaining 6 foot piece as shown, using only a couple of screws per assembly, lining up the ends of the newly created assemblies with the ends of the 6 foot piece. This should leave a 9-7/8 inch gap, into which the First base assembly should interlock.



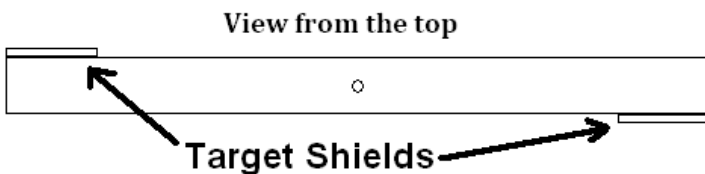
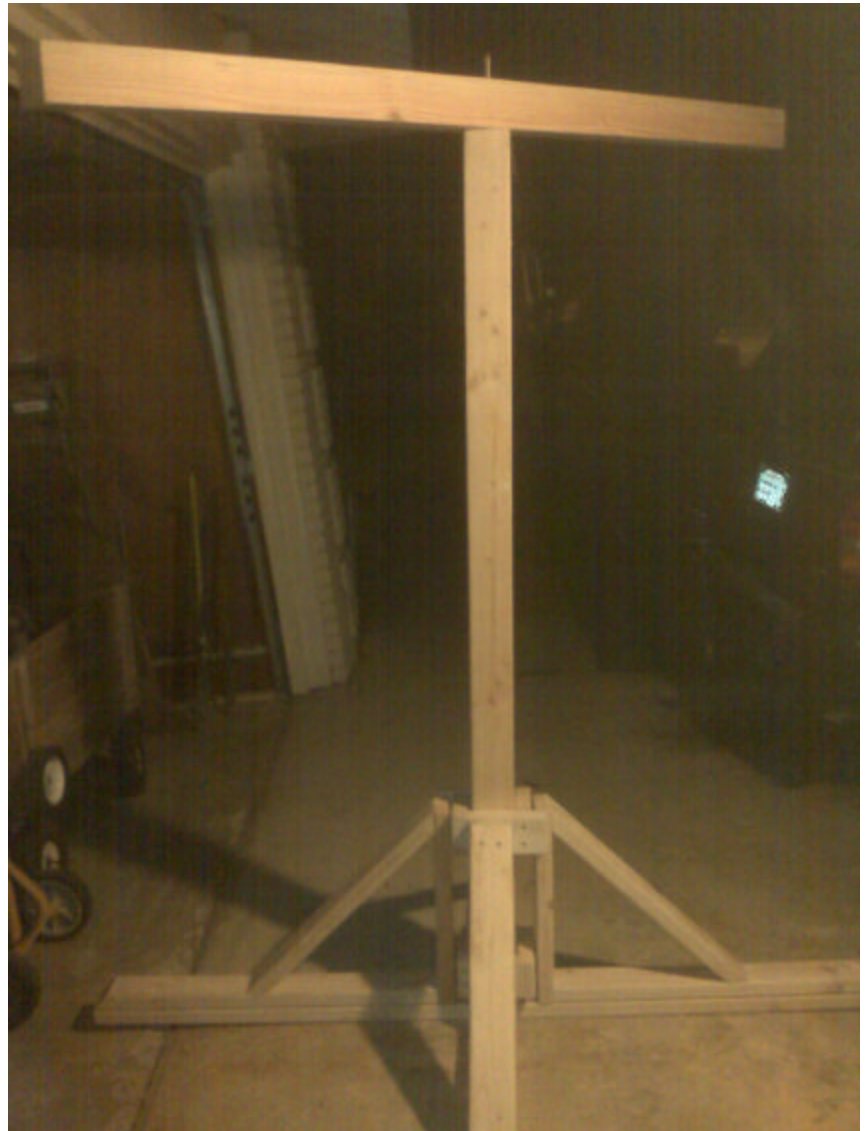
Install the First base assembly perpendicular to the second base assembly allowing the two assemblies to lock together. This is to check the fit between the two assemblies. The pieces should be snug to avoid excess play as too much play will cause the pieces to wear more quickly. You should still allow enough room to get the First assembly in and out and to allow for swelling. Keep in mind that there will also be a layer of stain/sealant. If the fit is satisfactory, place marks (pencil works well and can be erased later) on the base where the diagonal braces that have not yet been fully attached meet it.

If there is more than a 1/16 inch gap between the top of the Second assembly and the box at the top of the First assembly, squeeze the top of the second assembly together to get the desired fit and mark the base of the diagonals accordingly. Pull the two base assemblies apart from each other. Remove the four screws holding the Second base assembly together. Line up the diagonals with the marks made previously and secure to the base with two screws each from the bottom of the base. Remount the two assemblies onto the 6 foot base again with the four screws (two per piece). Install the First base assembly into the Second base assembly again and double check your fit.



Provided the fit is okay, you can pull the two base assemblies apart again and put a few more screws into the Second base assembly. The second base assembly is now complete.

The two base assemblies fit together. The upright should slide into the hole in the middle of the base. The arm with the hole with the 1/2 inch EMT in it should slide over the spike. The arm should spin easily on the spike. Once all the pieces have been assembled and tested, disassemble them, spot sand as needed, and stain.



Cut shield blanks about 8 inches wide by 10 inches long to attach to the arm as a target. I have found 1/2 inch plywood to be sufficient. You will end up replacing them regardless as this is the area that gets beat on. You can place two of them on the arm on opposing ends facing opposite sides to make resetting the quintain easier, and to keep the weight balanced.

I have included a template for shield blanks on the next page which can be reprinted in the future to make additional targets.

If there are questions or comments regarding this design, feel free to email me, Marco Solario, at dmahi@horizons-end.org

