



Assembling your Syren Rope Rocket

US Patent # 5232168-28

Materials List...

Eye Screws – 11

Large gear – 1

Small Gears – 4

1/8" diameter brass tubes – 4

1/4" bore Shaft Hubs – 2

6-32 set screws – 8

1/8" bore tube collars – 4

¼-20 Machine Screws 1" long – 2

#2 Phillips Insert Bit – 1

Large ¼" Bore washer – 1

Finish nail - 1

Small ¼" Bore washers – 2

Small 1/8" Bore washers – 8

Laser cut parts – Cherry

Introduction...

All of the scale model rope available from Syren is made by hand on the ropewalk you see pictured above. Now you can make your own scale model rope using the Syren Rope Rocket. There is an art to making rope but it truly isn't rocket science. With a little practice, you will soon be making scale model rope just like we do.

Assemble your ropewalk and then watch the video lessons provided on the Syren Website.



Step One – Assemble the laser cut wood parts for the head stock and tail stock of the ropewalk. It is pretty straight forward. Just examine the photos below and make sure the laser etched side of each upright is facing the correct way. This is very important. Use yellow carpenters glue. Depending on your preferences you can also remove the laser char from the edges of the laser cut parts before you assemble them.



Sand the surfaces well and apply several coats of wipe on poly or other protective finish.



To complete step one, take the two laser cut discs and insert the screw eyes into the laser cut pilot holes.

One will get 3 eyes and the other will get 4. Do not place one in the hole surrounded by a star. That is reserved for the finish nail which will be used as the "stop" for your ropewalk.

Note in that same photo above how each eye should be opened up after you insert them into the holes. Open the eyes just a little bit. Maybe just $\frac{1}{32}$ ". This will make it easier to tie off your string when you start making rope.

For extra security, use some CA on each screw eye before you insert them into each hole. There will be quite a bit of tension on these ropes when you make them, especially with the larger ropes. You don't want them pulling free at the worst possible times!!!

Step two - the tail stock...

On the tail stock, the one with fewer holes, place one of the machine screws through the center hole with washers as show in the following photos. Note that the large $\frac{1}{4}$ " bore washer goes on the inside.



Step Three...

Your Syren Rope Rocket can make both 3 and 4 strand rope. With just a quick change of the disc and smaller gears you can change from 3 strand to 4 strand. But for now, set up your machine with the disc for three strand rope.

You will need to slip the 3-strand disc onto the machine screw followed by one of the $\frac{1}{4}$ " bore shaft hubs.



Tighten the set screw on the side of the shaft hub to fully secure the shaft hub against the wood disc.

Then as shown in the photo on the previous page, drill small holes through the 4 holes in the face of the shaft hub so they go through the wood disc. (You no longer have to drill them as these holes are now laser cut for you) Use a 3/32" drill bit. A 3/32" drill bit is actually smaller than you will need but this will prevent you from scuffing up the threads in the four holes of the shaft hub.



Then loosen and remove the shaft hub so you can enlarge the holes in the wood disc slightly. You can use a needle file or even a larger 7/64" drill bit. The four holes don't even need to go all the way through the disc. These holes are just to register the disc against the shaft hub with set screws in the next step. You can repeat this process with the 4-strand disc also but in step four, set up the tail stock with the 3-strand disc in preparations for your rope making tutorials.

Step four...

To finish up the tail stock, place the three strand disc back on the machine screw and add the shaft hub. Tighten the set screw on the side of the shaft hub. Tighten it very well as this is what will keep the disc and hub from flying off the machine when it is turning at high speed. The set screw should actually crush the threads of the machine screw creating a flat which will help secure it. I also applied a drop of CA Cyano or Loctite to this set screw because it will be rotating at a very high speed.

Almost forgot...it is best to add four of the small set screws through the face of the shaft hub first and slightly into the four holes you made in the wood disc. Make sure the set screws enter those four holes in the wood disc because that is what keeps the disc spinning

properly. I also used some Loctite on these four small set screws because they will have a tendency to loosen up at high speed with the forces created when you make rope.



Then afterwards tighten the set screw on the side of the shaft hub to secure it to the machine screw. BUT make sure the disc turns freely after you tighten this set screw. It shouldn't be too tight with any friction afterwards. It should also not be too loose that it wobbles. Just tight enough so that it turns freely.

Step five ... the head stock...



Take the four small gears and the four short lengths of brass tubing. Insert the brass tubes into the bore of the gears. You can use a small hammer to gently drive the tubes into the bore. It will be a very tight fit as it should be and it will be impossible to remove them. So study the photo above carefully so you orient the gears properly on the tube ends. Make sure they face the right way!!!

Step Six...



Screw the four remaining eyes into the ends of the brass tube as shown above. You will probably see that once you screw all of the way, they will appear to be very loose. This just won't do. So you will need to secure them in the brass tubing with some glue. It is best to use some two part epoxy that is very strong. Apply some to the threads of the eye and then screw them into the brass tubes as shown. You could also just use some CA glue but an epoxy is best for this. Don't be shy with the glue. There will be a lot of stress and tension placed on these eyes. I used CA and then let it dry fully.

Once again, open each eye carefully to make it easier to tie of your thread later. I did this after the eyes were glued into the brass tubes.

Step Seven...

When you change your ropewalk from a 3 strand to a four strand it is as simple as loosening the tube clamps that hold the small gears in position. But since you will be following the video tutorials, set up the machine initially for 3 strand rope. You will need the eight small washers and the four small tube clamps with set screws.

Set one of the small gears aside for when you want to make four strand rope. You will be inserting the remaining three gears into the holes without stars on the head stock. See the photos provided. Note how the small washers are used on both sides of the head stock.



Step Eight...

Use three of the four tube clamps to secure the small gears in position. Tighten the tiny set screws on each clamp. Make sure these gears can turn freely after you are done. This is very important. See the photo on the next page (top left).



In that same photo you will notice the second $\frac{1}{4}$ " machine screw was pushed through the center hole along with another $\frac{1}{4}$ " bore small washer.

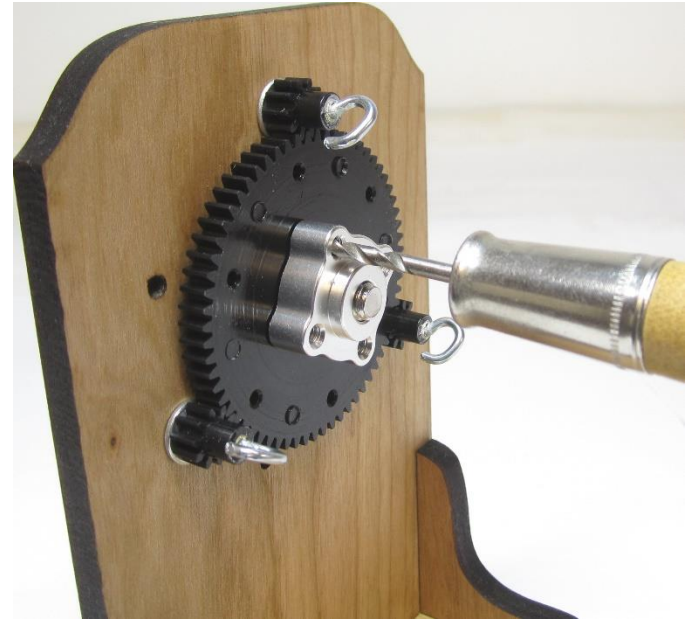
On the other side of the head stock, you can slip the large gear into position as show below.



It should slip onto the machine screw easy enough with the plastic center shaft of the gear sliding into the center hole of the upright.

Step Nine...

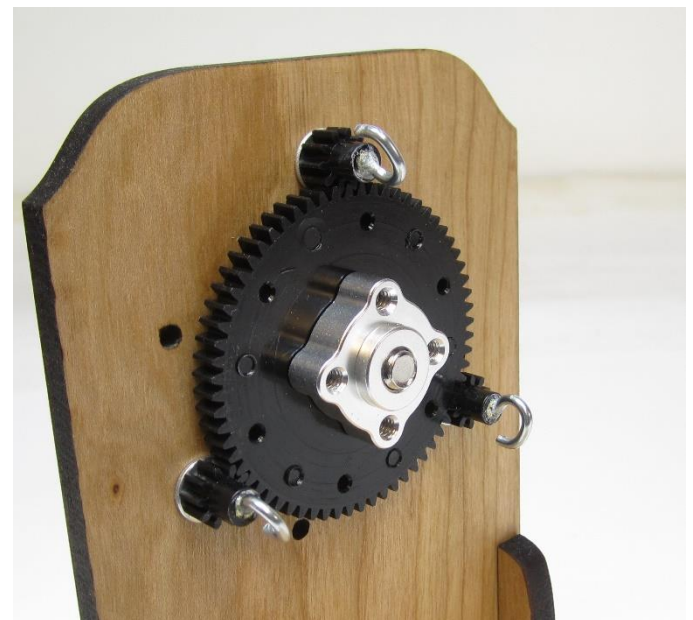
Just like with the wooden discs for the tail stock, place the remaining shaft hub into position temporarily.



Tighten the set screw slightly to secure it for drilling.

Then drill those four $\frac{3}{32}$ " holes through the gear. Enlarge them slightly so the four small set screws will fit snug into them. Clean up any plastic burrs on the gears with some sandpaper and place it back onto the machine screw.

Step Ten...



To finish it up, insert the four set screws into the face of the shaft hub and secure them with loc-tite. You won't

be removing this large gear again so make sure it is secure. After you tighten the set screw on the side of the shaft hub, make sure the gears will turn freely. Remember to tighten this set screw well and crush those threads on the machine screw to create a flat.

You are now ready to make some rope!!!

You will need to have a few things handy to make rope.

You will need some large clamps to secure the head stock and tail stock to the edge of a table.....or two tables depending on how long you want your rope to be.

You will need a sharp #11 blade in your hobby knife.

You will need some WD-40 lubricant.

You will need the #2 driver bit supplied with the ropewalk.

Finally, you will need a cordless rechargeable hand drill. I use a driver/drill by Hitachi. They are very small and light-weight while having a high RPM limit. My Hitachi driver/Drill can turn at 2400 RPM. It is also reversible and has a variable speed.

Hitachi 18DS 18-Volt Lithium Ion 1/4-in Cordless Variable Speed Impact Driver.

Because all of our rope is 20-22 feet long, I actually have two of these. I keep one at each end of the ropewalk as I am laying up the rope. It's just easier this way and after forgetting to carry it down to the other end after initially twisting the thread strands, I just keep one at each end all of the time.



I have made two video lessons to show you how to use your Rope Rocket to make some great looking rope. The lessons are designed to make rope half the usual length. I don't know how much space you have in your shop to make rope so I designed these two lessons so you can make ten foot lengths of rope. You can basically make rope any length however. I actually the Rope Rocket to make a 43' length of four strand rope. It was tricky and on a nice spring afternoon I took the ropewalk out into the backyard where I had enough space to try this. That was the last time I attempted to make such a long length.

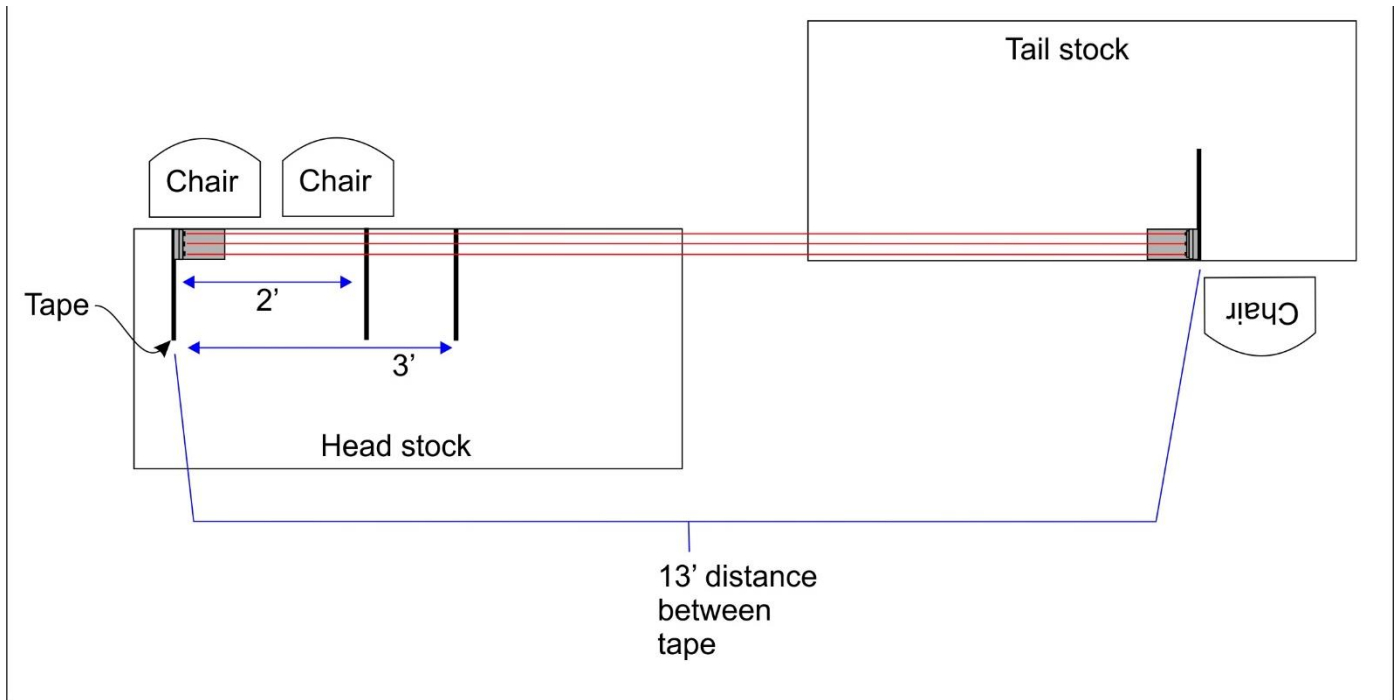
I am perfectly happy to make 20' lengths of rope and you can do the same. But for our lessons, ten foot lengths are a great start.

I have been making rope this way for years now on my Rope Rocket. I can comfortable make a 20 foot length of rope in about 8 minutes.

With a little practice I am sure you can too.



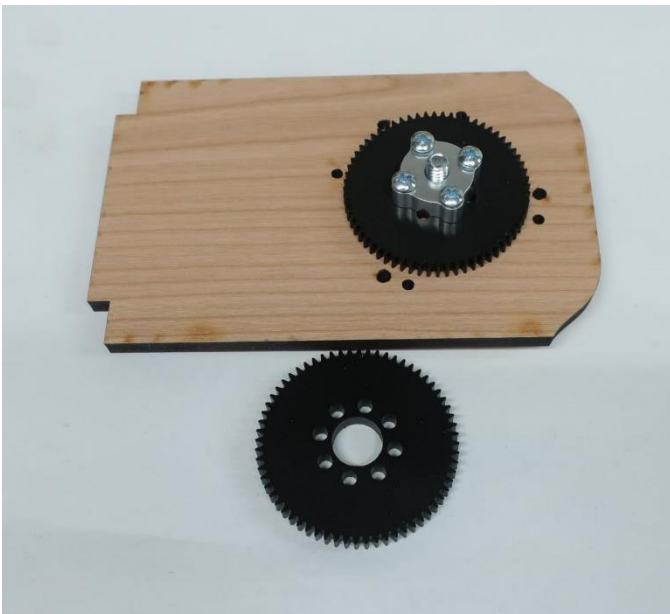
I have created a diagram with the initial set up presented. I use two six foot tables. The diagram shows the set up you will need to follow the video lessons you can watch on the Syren website. This set up will make 10 – 11' lengths of rope .



Updated large gear for easier assembly...

The gear on the new version just has the holes predrilled for the screws that hold the stainless steel hub in place.

see the circular shape on the hub (photo left) fits the bore hole of the gear perfectly and the screw holes in the hub line up perfectly with those on the gear.....you can't get better than that. Then you tighten the set screw on the hub into the shaft $\frac{1}{4}$ - 20 machine screw) to secure it.



You can flip the hub around to secure it in the bore hole of the new style gear as it is a perfect fit. You