Making a lathe steady rest

The project begins with selecting a design.

I did the usual internet searching.

If you want to purchase plans, this site has downloadable plans for $9.99.
http://www.woodprojectsonline.com/st...teady_rest.php

I am comfortable seeing a picture and figuring out how to make the item.

This is a detailed PDF document to build a steady rest.
http://www.azwoodturners.org/SteadyRest.pdf

This site has links to several designs.
http://www.woodturningonline.com/Tur...s.php?catid=36

I based my steady rest on the 3rd site in the above link.

http://www.atbq.qc.ca/jm2/steady.htm

I have a 16in swing lathe, so I concentrated on the portion
"**Steadyrest for Stubby 750 or any 16" Spindle Dia. lathe**"

Once I knew the design I then had to begin to write out the details.

I normally do not work from plans. I felt this project looks simple, but it needs attention to the details.

Materials which will be needed.

a) Sheet goods or solid wood. I used birch plywood for the "ring" and a piece of red oak for the base.

b) Some type of wheel, roller or bearing. A lot of people use in-line roller skate wheels since they are readily available in most places.
I was going to purchase some, but I happened to see a pair of in-line skates in a yard sale for a mere $5. Not bad for 8 wheels.

FYI, if you just want to use the bearing, they can be popped out with a screwdriver very easily. I am going to use the bearing on a plane blade sharpening jig. Future post.

I wanted to use the wheels. I felt the plastic would grip the wood and also help to avoid marking the wood.

c) Nuts and bolts to attach the wheels, and for the adjustment mechanism.

d) A method to hold the jig to the bed of the lathe. I was going to cut a piece of plywood, but happened to find some steel plates in a local flea market, so I used one of the plates. See later picture.

My next step was to draw out the design full size. This helps in getting the cut lengths, and the paper pieces can be used to lay on the plywood to "nest" the pieces to minimize waste.

You will have to determine your own maximum diameter. The thicker the ring, the stronger it will be, but it will consume some of the potential diameter.

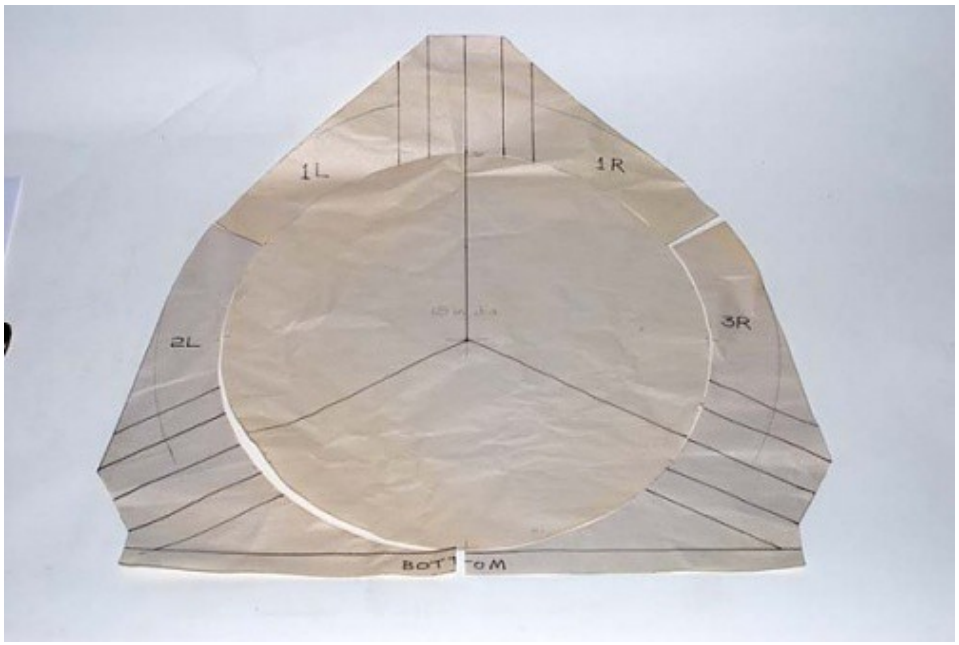
I started out with my ring being a nominal 2in wide and the wheel supports 2 1/2in wide.

I initially drew this out with the intent to follow the design in the internet link which has about 1in wide strips for the supports of the wheel spokes.

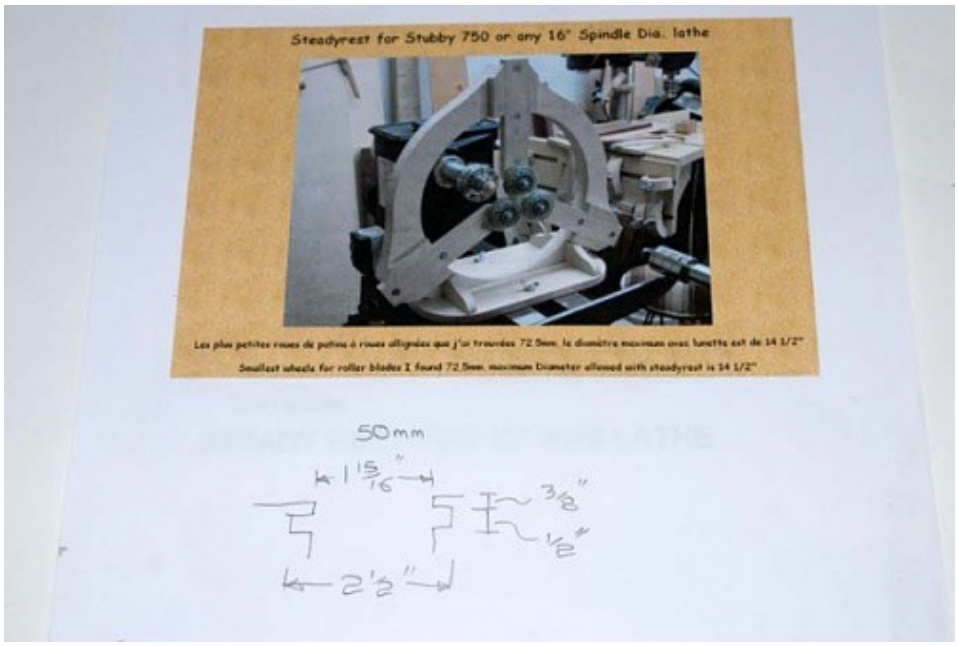
The most important piece of advise is MARK EVERYTHING. If you do not mark, I predict some challenges during construction and / or assembly.

You can see I had 3 pieces to cut. The centre was just to help in the layout of the spokes. I was designing for equal angles. This is not a requirement, but I think easier.

You can see I was intending in the bottom of the ring being glued into a dado in the bottom red oak plate.



I then measured the bed details so I knew the distances between rails, the machining for the lip, etc.



My first change to the design was that I decided to make the spoke support go full distance between the supports, so giving me full 1 1/2in thick ring, except for the 2 1/2in width of the spoke.

I felt this would help to make the jig stiffer. I am happy I did this.

The "back" side of the ring matches the 3 pieces of paper from my initial cut out. I placed the joints to be 1/2 way in the length of the spoke supports.

The cut outs were done on my bandsaw. I then cleaned up the outside edges with my disc sander and the inside edges with a 2 in dia. drum sander mounted in my drill press.

The bottom red oak had two dado's routed for the rails. I then hand planed the sides to match the slop of the lathe casting.

Another change from the design is that I have only a single bolt. I felt the plate I was using would hold the jig firmly enough. So far it does.

The spokes which hold the wheels. I mentioned earlier I made these 2 1/2in wide. I was trying to make these stiff, and since they have a slot cut in the middle, if they are too narrow, they will flex.

The design I am using has only 3 spokes. I have seen designs with more. A 3 spoke design will give a slightly smaller minimum spindle diameter than a 4 spoke design. This was my logic.

The spokes are attached to 1/4in dia carriage bolts, so I routed 1/4in slots in the spokes. The length of the slot will depend on your lathe, the width of the ring, diameter of the wheels, etc.

The routing requires setting stops on the router table, or a mark on the wood. Some folks will not like doing the routing. The router bit was set to be a little higher than the plywood. The router is turned on and then the piece carefully lowered onto the spinning bit to start the cut. Note CAREFULLY. You need to be pushing the piece against your router fence and controlling the descent. It is not hard to do, but if you are not paying attention, you may ruin the piece.

It is easy to lay out the pieces and find the maximum and minimum points to rout out the slot. This empirical method is faster than calculation, and less error prone.

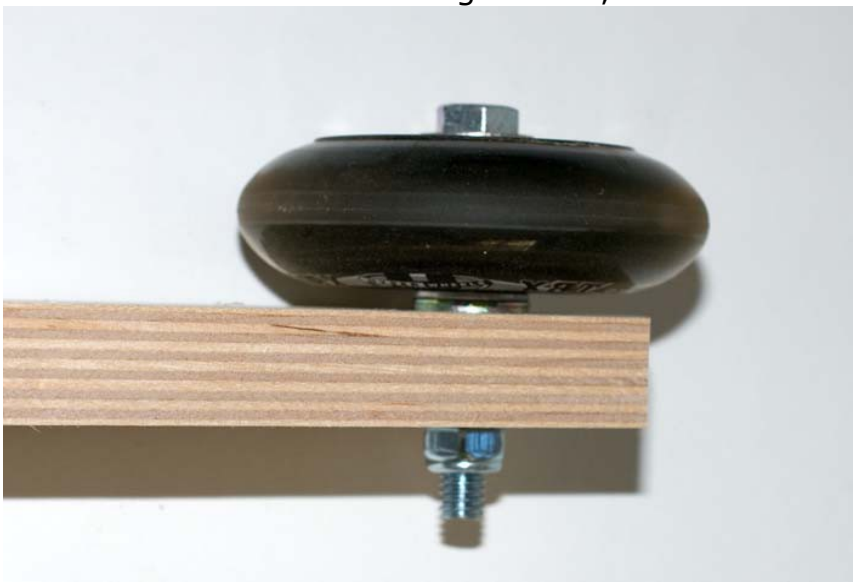
I cut off the corners at the wheel end to prevent interference of the spoke and the wood being turned.

I used lock nuts which have a plastic collar to grip the screw thread. I did not want these to come loose while in use.

The wheel side of the spokes. I decided to have the bolt head on this side. Personal preference, the head can be on either side.

The wheel circumference needs to extend beyond the spoke, but not by much. I think this is about 1/4in.

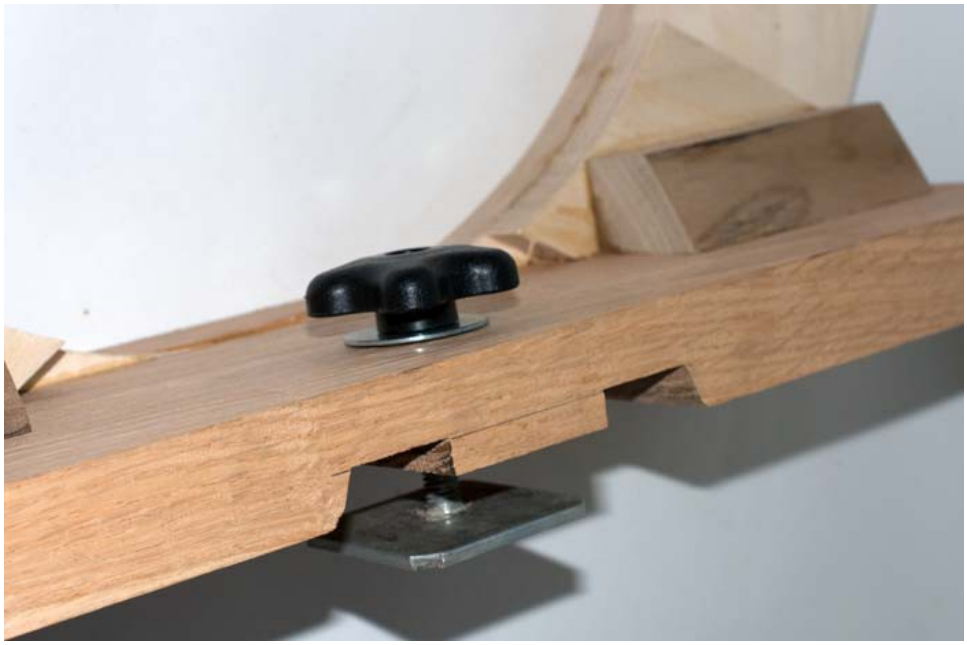
It is important to have some spacer between the wheel and the spoke. The spacer in this case is a couple of washers. Just ensure the washer contacts the INNER part of the bearing but not the OUTER part of the bearing. If your washer is too large, you will need to either find something smaller, or file down the washer.



A detailed picture of the base. I mentioned earlier I was able to find these pieces of flat steel in a flea market. They span between the grooves in the rail and had a hole in the centre. I am using a carriage bolt, so all I had to do was file some corners in the hole to fit the head of the carriage bolt.

To prevent the bolt from falling out, I decided to epoxy the bolt to the plate. This is for convenience, not adding any strength.

This picture shows another change to the design. I glued in a couple of scraps of walnut as gussets to try to make the attachment of the ring to be base stiffer.



To use the steady rest, the bolt is removed, the rest laid onto the lathe bed at the desired position. In this example, at the far end of a spindle.

The plate is located in the groove between the rails and the bolt inserted into the hole in the base, then tightened with the knob.

I have found this single bolt design to work for my needs.

The knobs on the spokes are loosened and the spokes moved to apply light pressure on the piece being turned, then the knobs are tightened.

If the piece has not been turned to final diameter you will not need to worry about the wheels marking the piece, since you will be later removing more wood.

If the piece is at final diameter, I apply masking tape around the piece where the wheels will make contact. This prevents the wheels from marking the piece.

I have used this steady rest for many projects. I can now say that I would not want to be without this jig.