Off-centre screw chuck

I decided that I wanted to do some turning where the work piece centre was not parallel or at ninety degrees to the headstock. So I came up with this idea. I don't know whether it is an original idea but I doubt it! However, I haven't seen it before.

Materials and tools needed

Spindle blank 100m.m.x 85m.m. of a robust hardwood

10m.m. dia. X100m.m.long coach screw

Epoxy resin adhesive

Spindle roughing gouge

Spindle gouge

Parting tool

Jacob's chuck

Drill bits and Forstner/ saw-toothed bit

Socket or box spanner to fit coach screw head

Method

I used a piece of rowan that has been in my garage for a few years and I used the bandsaw to cut a spindle blank approximately 100m.m.(4") x 85m.m.(3 1/2"). I mounted on the lathe between centres and using a spindle roughing gouge turned it to a cylinder 80m.m. in diameter.

Next turn a sphere on one end of the cylinder using a spindle gouge. . The jaws of both my Nova and Record Power chucks have an internal diameter of 46m.m when almost closed in compression and it is at this measurement they have the greatest holding force. The sphere should be sized to suit your chuck's jaws at their greatest holding force. Sand to 180 grit. There is no need to go any higher than this as the sphere will soon be marked when held in the chuck jaws.

Remove the work from between centres and fasten the sphere into your chuck. The centre mark from the drive can be used to ensure that the work is running true. Using a parting tool trim off any excess wood over approximately 30m.m. length. True up the end.

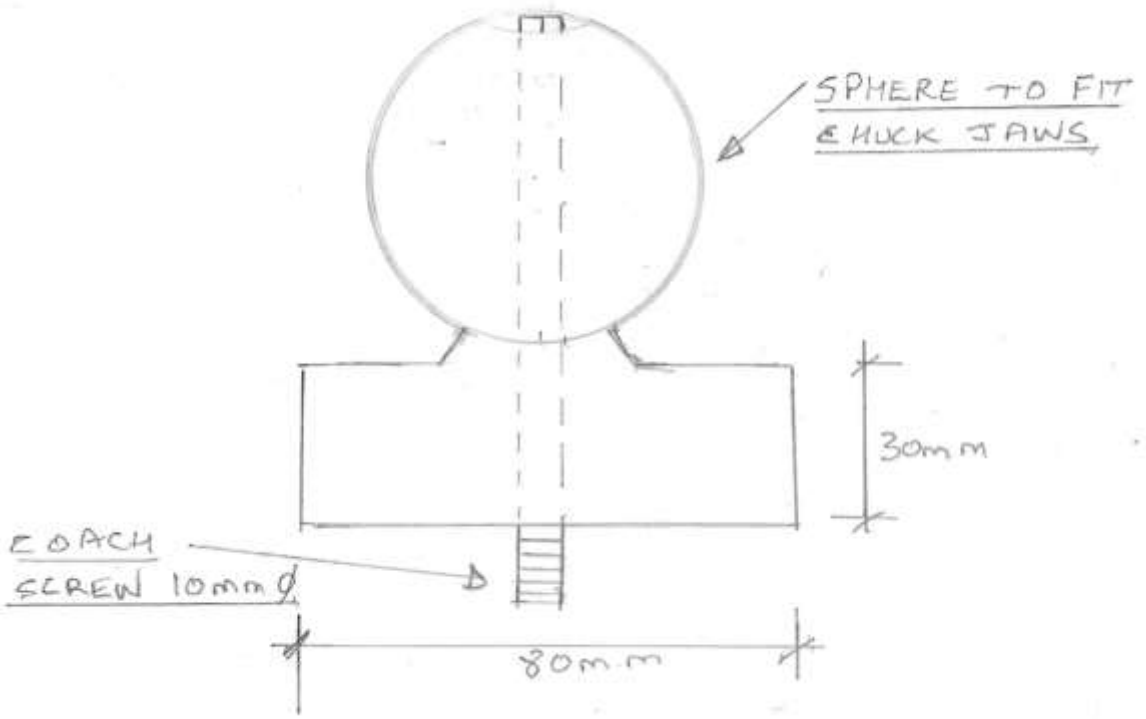
Using a Jacob's chuck and drill bit, in the tail stock, drill a hole through the complete piece. The diameter of the hole should be sized to allow the coach screw to be screwed into it.

Remove the item from the lathe and using either a jam chuck or suitably sized screw chuck reverse mount the item. Using a Forstner or saw toothed bit drill a recess to accommodate the head of the coach screw.

Mix a small quantity of epoxy resin adhesive and apply it to the coach screw threads that will not be seen and under the screw head. Using a box spanner or socket screw the coach screw into the hole in the work piece. I needed to hacksaw off around 25m.m. of coach screw to leave 25m.m. of almost parallel thread protruding. When the epoxy sets and cures the article is ready for use.

In use the bowl blank or spindle blank is first screwed onto the chuck and then the sphere is placed into the chuck and the off-set determined before tightening the chuck jaws. This item should **always** be used with tailstock support and should not be relied upon to hold the work on its own. Start with lathe at low speed and unless you are experienced with off centre work use a small off-set to begin with until you gain experience.

The idea has worked for me and as with all woodturning it should be used with care. If you don't feel confident or competent then don't make or use the item.


SPHERE TO FIT
CHUCK JAWS
30mm
EACH
SCREW 10mm ϕ
80mm