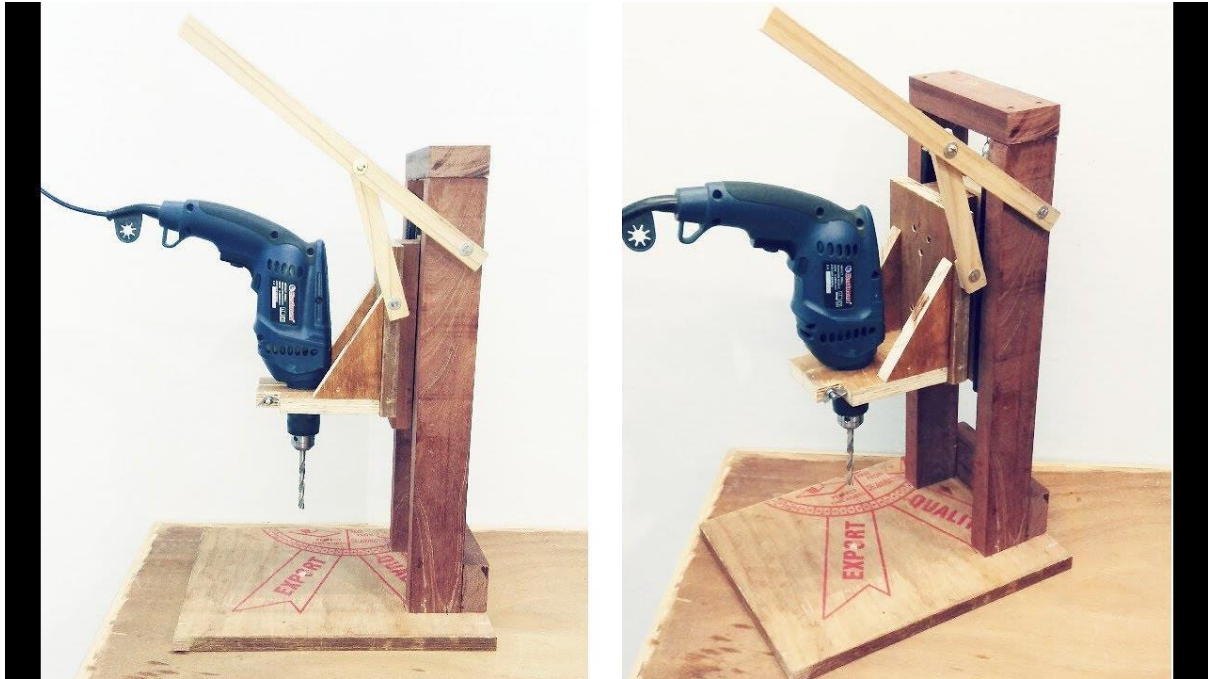


# Drill Press

I decided I would make a DIY Drill press / Pillar Drill and researched possible design ideas on websites such as Instructables / YouTube. Such as the one ([Make A Homemade Drill Press Stand | | DIY Homemade Drill Press - YouTube](#)) shown below:



Majority of the designs featured the use of 'ball-bearing draw-runners' as the main means of moving the drill up & down. For my design I decided to challenge myself to make one using linear steel shafts with ball-bearing bushings.

**PART 1:** Constructing of the main frame that will hold two linear steel shafts. Two linear ball-bearing bushings will be placed onto these shafts; the bushings will be contained within a smaller frame. The purpose of the shafts and bushings is to allow an electric drill to move up and down when drilling holes in wood.

**PART 2:** Construction of the base that will fit onto the bottom of the main frame (part 1). The base will be square (easy to make) and be removable (bolted to the frame).





**Photo 1: Purchased a £20 piece of Timber from B&Q. Dimensions: 45mm by 25mm by 2500mm.**



**Photo2: Measured out the dimensions for the main frame of my Drill Press. Cut-out 'Box Joints' in each of the four corners using a Band-Saw.**





**Photo 3:** Next, using a smaller piece of oak, I created a second frame using Dowel Joints in each corner.



**Photo 4:** I also drill 2x 12mm holes in both the Top & Bottom Pieces of Oak. These were for two Steel Shafts to be slotted through.





**Photo 5: I initially purchased a piece of £3 steel Tube from local hardware store, but it proved to of low quality so I decided not to use it.**

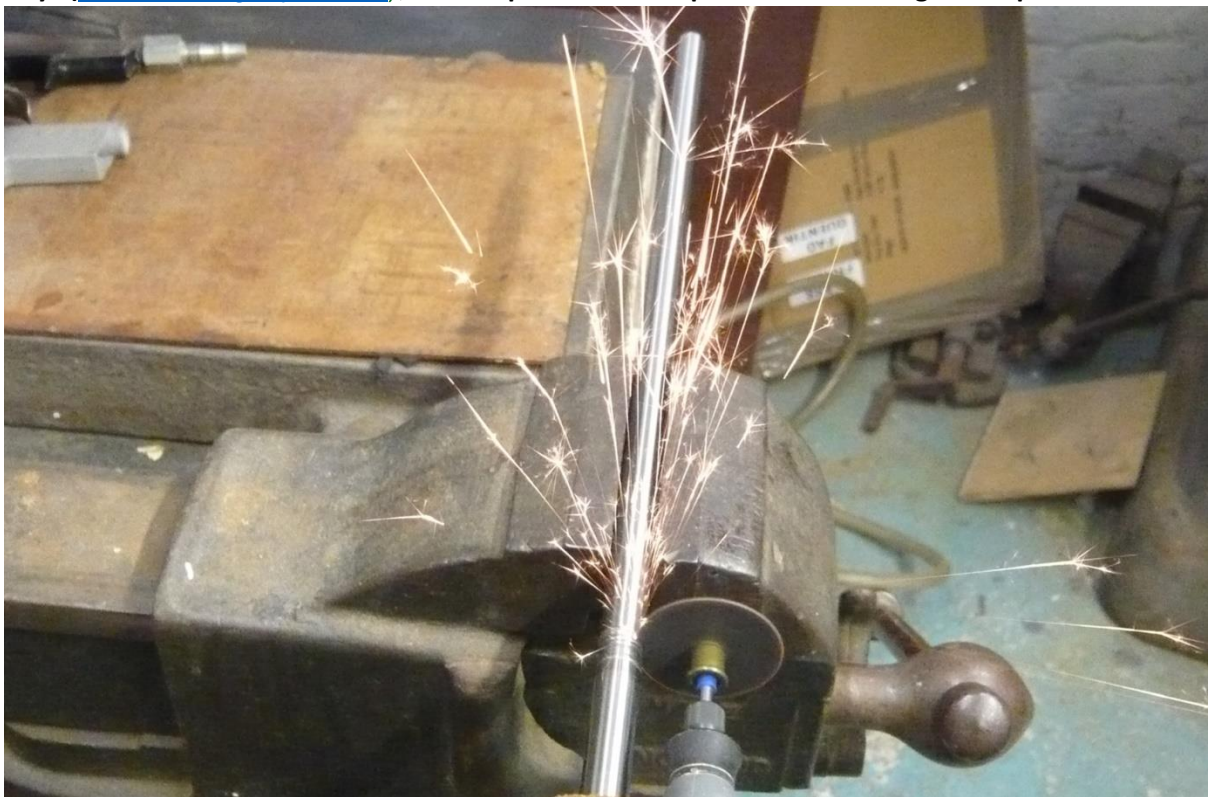


**Photo 6: ...shows the fully constructed inner and outer frames of the 'Ball-Bearing Shaft' part of my Drill Press.**





**Photo 7:** I purchased a piece of hardened-steel shaft (12mm diameter by 600mm) from Bearing Boys ([www.bearingboys.co.uk](http://www.bearingboys.co.uk)), which I planned to chop in half so creating two separate shafts.



**Photo 8:** Initially (see photo 7) I struggled to chop it down to size, trying both metal saws and the Lathe, before finally succeeding with my Dremel Hobby Drill + metal cutting disc.





Photo 9: Successfully cutting into steel shaft...

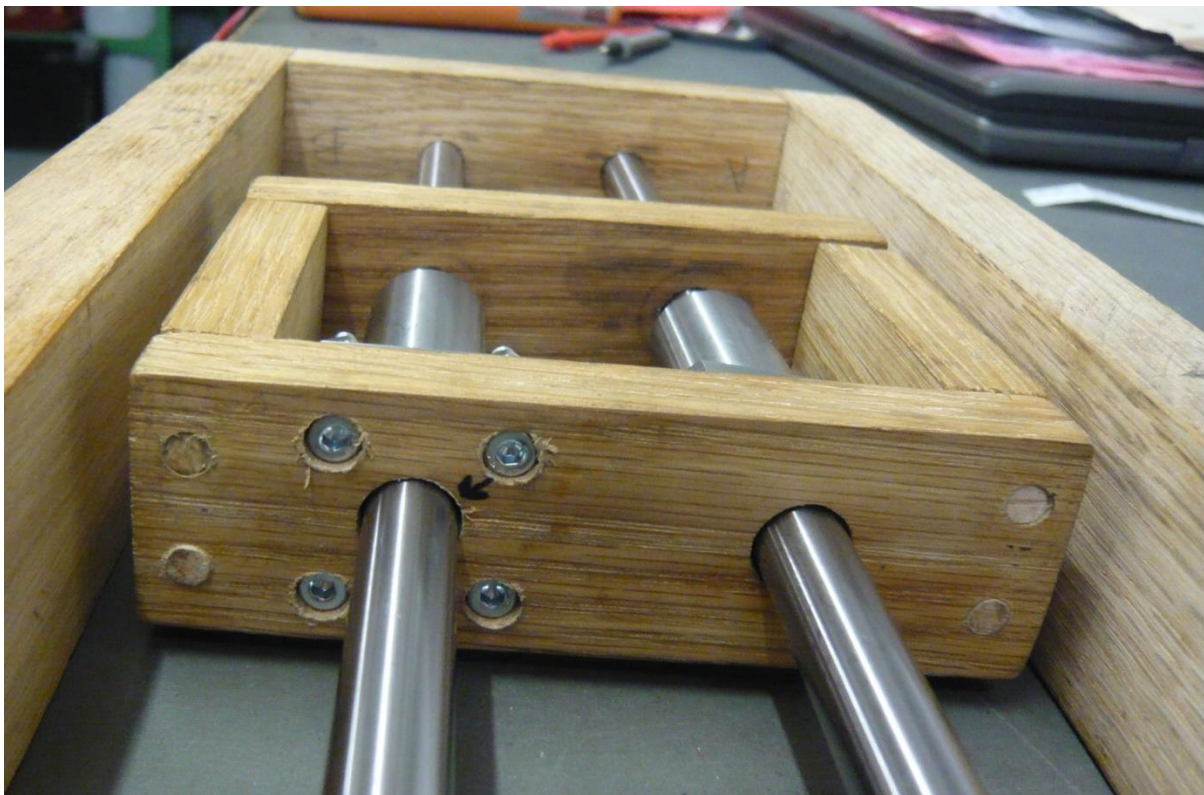


Photo 10: ...with Dremel metal cutting disc.





**Photo 11:** Next, I drilled 4x 12mm holes in the main frame and glued two of its box-joints, using dowel to further strengthen these joints. I left the other two joints unglued so I could extract...

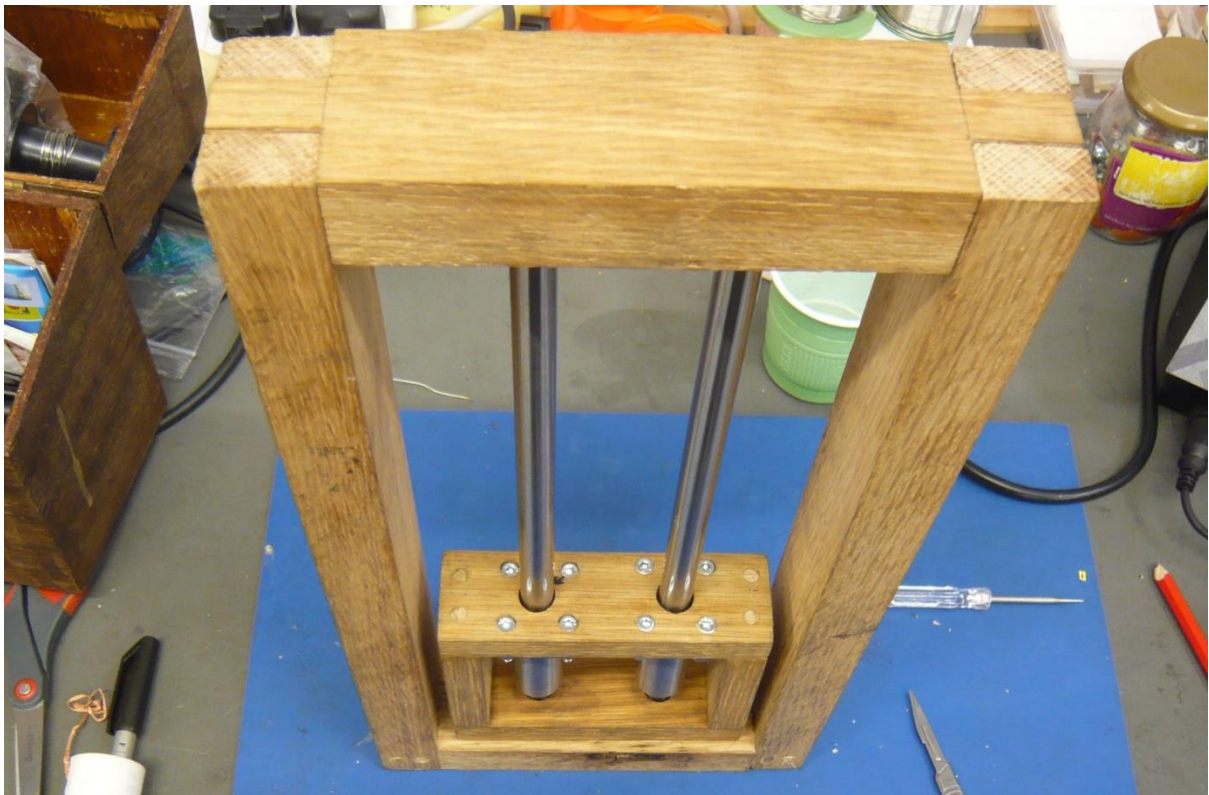


**Photo 12:** ...or insert the steel shafts and linear ball bushings (purchased on Ebay). I bolted both of the (flanged) ball bushings onto the inner frame (see above photo).





**Photo 13:** I had to re-drill one of the 12mm holes as the two steel shafts weren't aligned correctly.



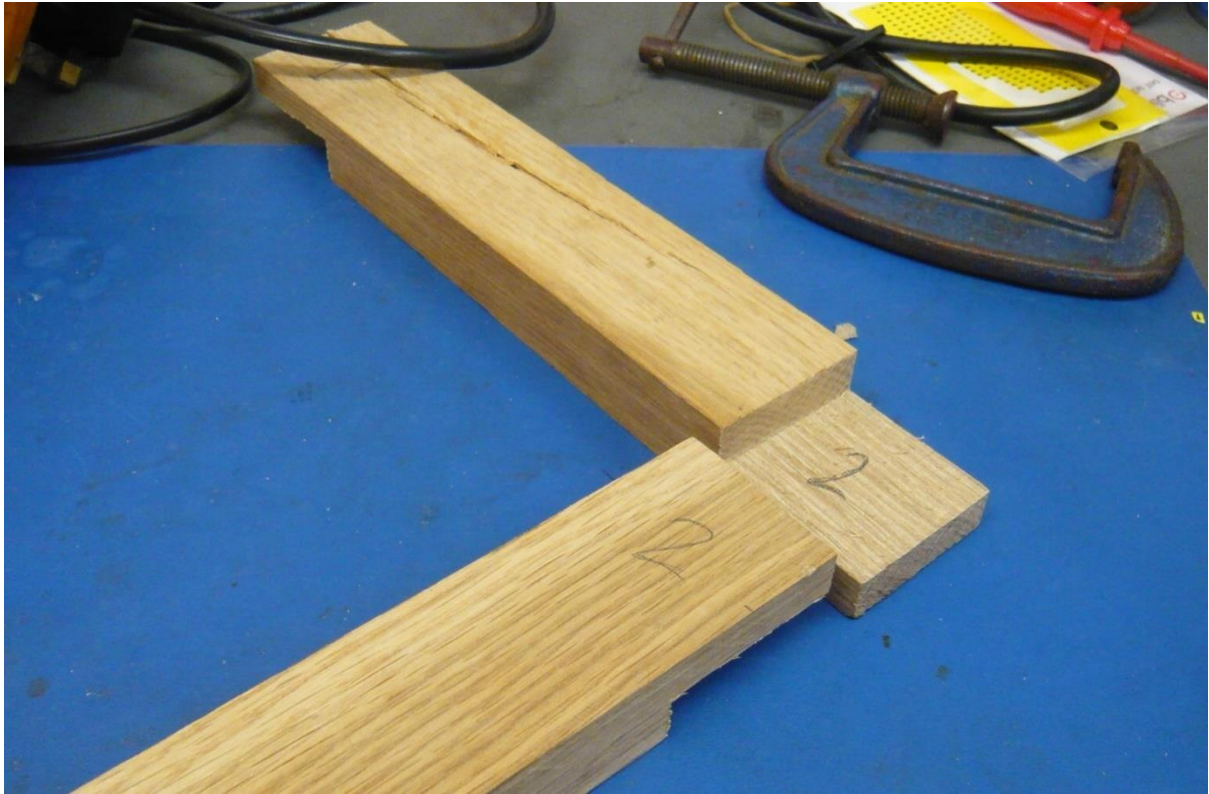
**Photo 14:** View from above of main Drill-Press frame.





**Photo 15: View from front of main Drill-Press frame.**





**Photo 16:** For the second part of the Drill Press I made a base that would be bolted onto the bottom of the main frame. I started by making another frame out of 4 pieces of Oak using the....

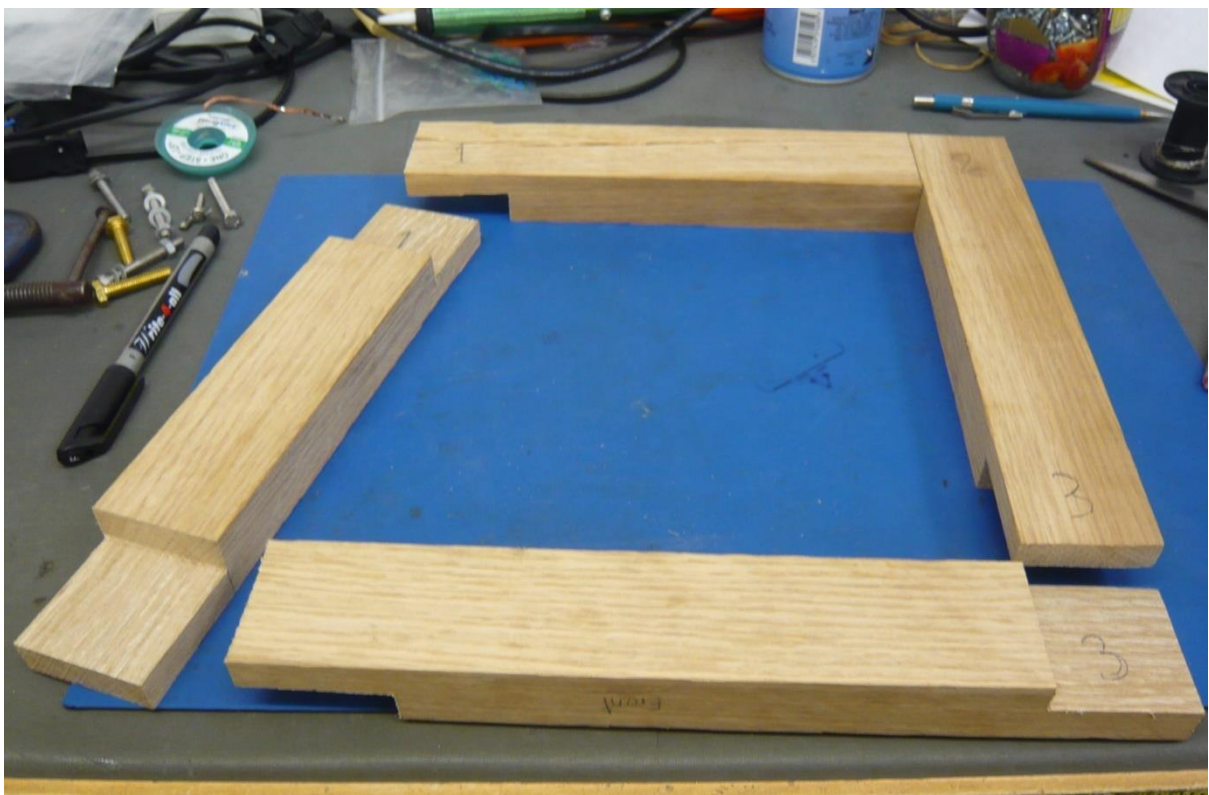


**Photo 17:** ...same piece of oak used in Photo 1 (Dimensions: 45mm by 25mm by 2500mm). I used 'Half-Lap Joints' for each of the 4 corners.





**Photo 18: Each of the four joints was glued, using Titebond II wood glue, then held in place with a G-clamp.**



**Photo 19: Photo shows 4 pieces of Oak and the 4 'Half-lap Joints'.**





**Photo 20: The completed Base frame after it has been glued.**

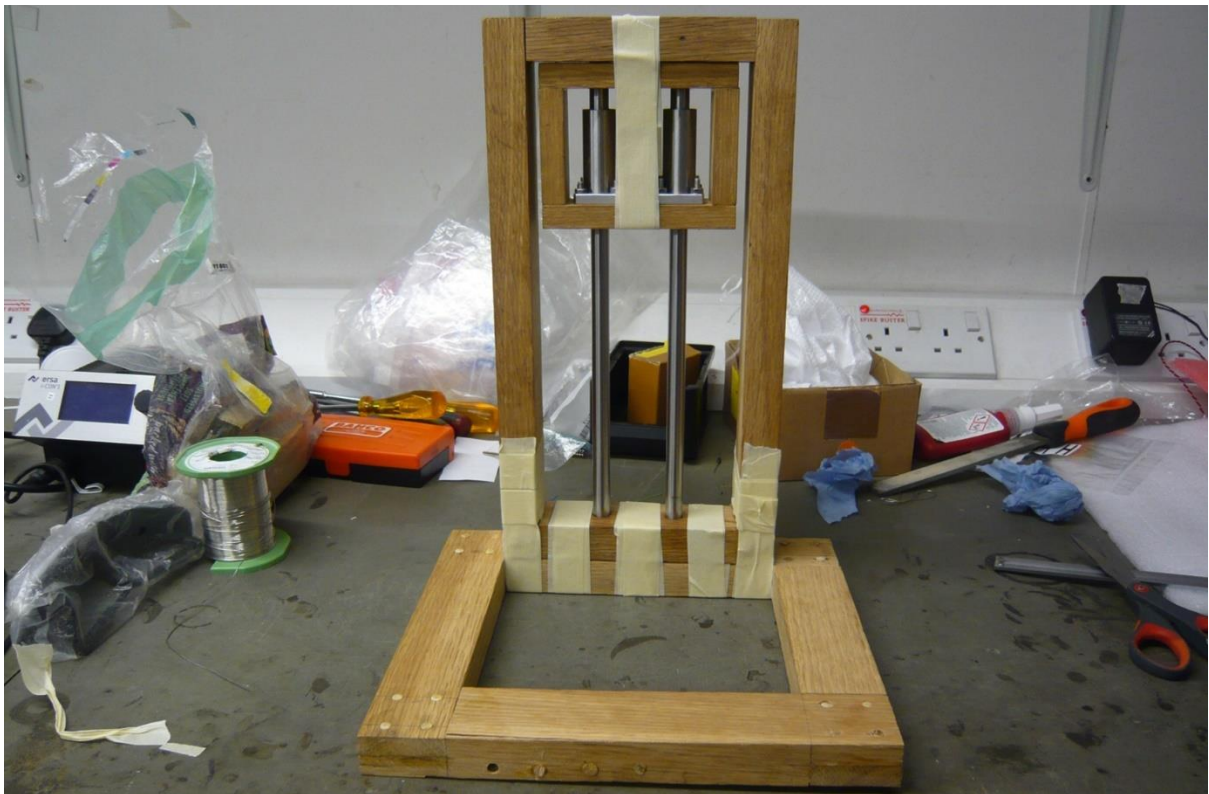


**Photo 21: For each of the four corners I then drilled 4x 6mm holes, fully through the wood, then inserted 6mm dowel (with glue) in each hole to add extra strength.**



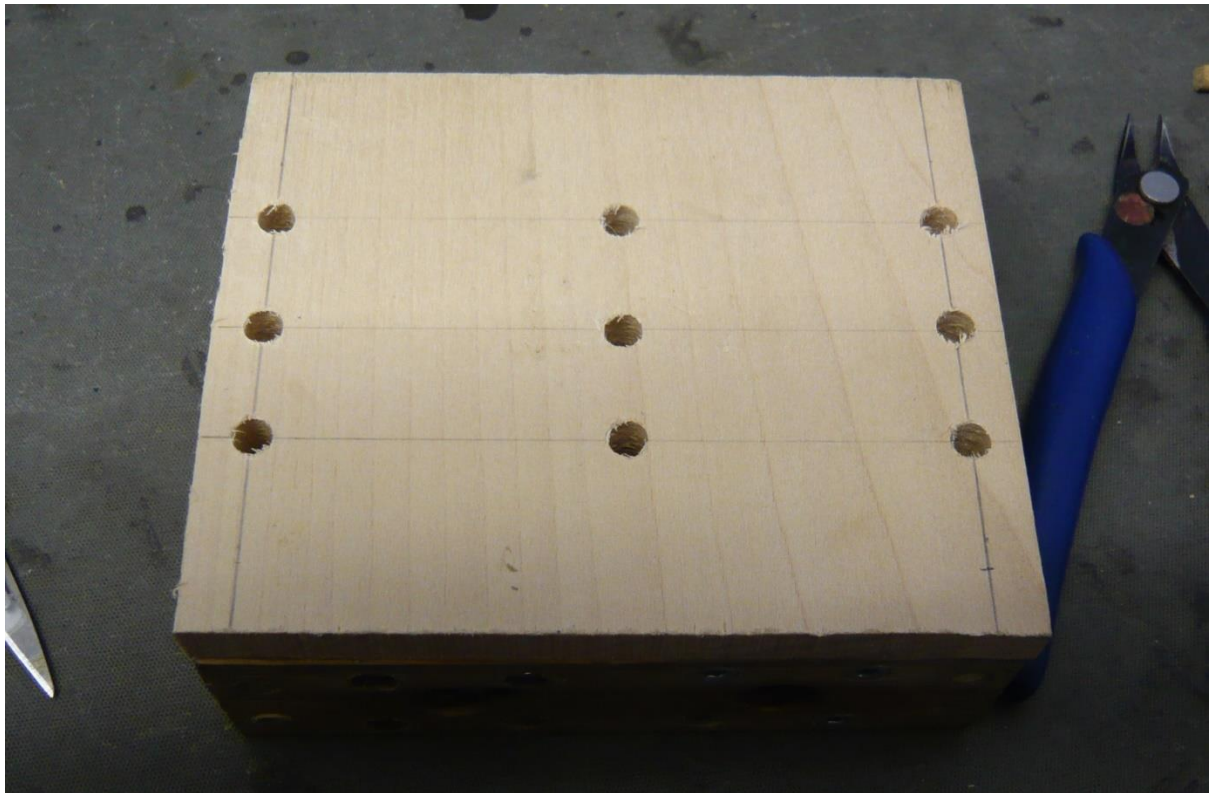


**Photo 22: Completed base frame with dowel inserts.**

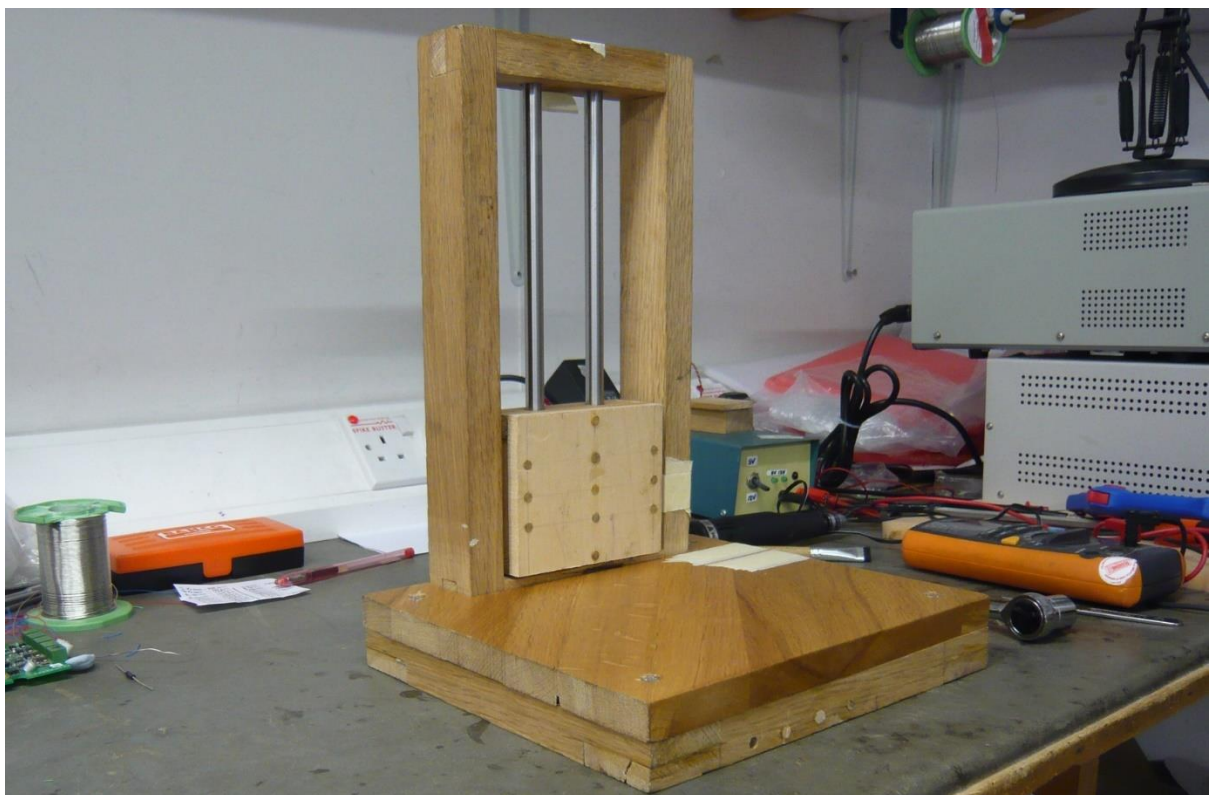


**Photo 23: I then fastened the main frame to the base frame, using masking tape, so that two holes could be drilled for bolts to hold the frames together. A Dremel + carving bit was used to increase diameter of the holes, at top and bottom, to allow bolt & nut to be countersunk into the wood.**





**Photo 24:** A 10mm piece of wood was glued, with dowels, to the ball-bearing bushings frame to allow it to sit proud of the main frame.



**Photo 25:** A thick piece of oak, recycled from oak cabinets, was purchased. It was chopped into size and then secured into place with a bolt and nut in each corner.





**Photo 26: Top view of base showing all bolt heads which have been counter-sunk into the wood.**



**Photo 27: View underneath the base this time showing the six nuts that have been counter-sunk into the wood.**





**Photo 28: Close-up view of four of the counter-sunk nuts.**





Photo 29: Image of completed base attached to the main 'ball-bearing' frame.

**\*\*\*To Be Continued\*\*\***