

Grinder carousel



Chris Grace builds a space-saving grinder carousel with storage

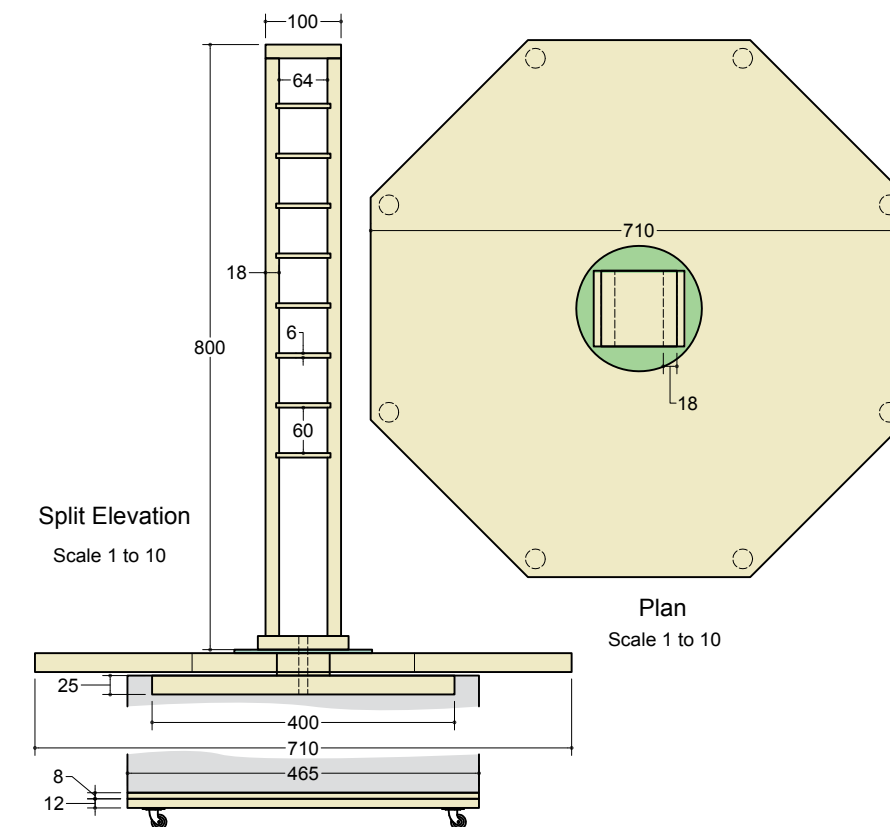
This is my grinder carousel Mk2. I had knocked up my original one on top of a redundant bandsaw base some time ago and it worked well, but the flaws that I inadvertently built in became more significant irritations over time. The three areas where improvements would be made were: a single storage area, where everything had been dumped together would be replaced by drawers for better access; the carousel is intentionally stiff – so that it doesn't move when in use – so knobs would be added that could be gripped when turning; and finally, the cables, which simply hung over the side of the original and got tangled, would be plugged into a switched trailing socket, fed through the centre of my new one.

This time, I decided to repurpose an office filing cabinet, which meant that I didn't have to make drawers – which would save time.

As I turn, carve and do other DIY, I have collected a number of grinders over the years. The first was a very cheap bench grinder, bought many years ago, which is still going strong. This is great for general workshop use. Next, I happened across a used wet-stone grinder, which, although slow, produces a fantastic finish and is best for not bluing carving gouges. Then came a used linisher, which is easy-to-set-up and quick-to-change belts. Finally, a reverse running polisher – great for carving tools.

1 First the filing cabinet had to be modified to be mobile, so I placed it upside down to remove the plinth and measure for a castor base.

2 I wanted to keep the unit as low as possible and found that I needed a 20mm base to space the castors away from the bottom sides of the cabinet sufficiently, to turn freely, hence I chose to use 12mm and 8mm



boards. One sheet was drilled for the bolts to attach the castors.

3 The other sheet was drilled to clear the bolt heads, which effectively made a 20mm sandwich. The castor base is a snug fit, so there was no need for any fixings or glue.

4 I tested that the castors would freely rotate; this would help to ensure my calculations were correct.

5 The MDF top had been cut to 710mm square. Now, the corners needed to be cut off to form a hexagon. Measuring diagonally from the centre, I placed a square offcut at 355mm.

6 Holding the offcut in place, I moved my ruler to align with the end of the offcut, then moved the offcut out of the way to draw the corner-lines that would be cut off to reveal a perfect hexagon. I used my tablesaw to cut off the corners of the hexagon, with the fence pulled back for sizing. That way the offcut doesn't bind when it's cut off. The clamp on the sliding table holds the work square and secure.



Cutting list

- Castor base: 465 × 465 × 12mm and 8mm
- Hexagon top: 710 × 710 × 25mm
- Top anchor: 400 × 400 × 25mm
- Big drawer reinforcement: 400 × 390 × 18mm
- Tower sides: 710 × 120 × 18mm × 2

7 Next, my router and circle cutting jig was used to cut an accurate 100mm hole in the centre of the top. To align the jig, I drew the circle first, then rotated the jig with the cutter just above the surface and nudged it into position before clamping.



8 I used a small strip of plastic as a bearing surface, as the edges of MDF are very grippy and don't slide well against each other.



9 An MDF circle was then turned to fit snugly in the hole. It is simply pressed against a small cork faceplate with a revolving centre.



10 MDF knobs were then turned and drilled.



11 For attachment to the underside of the top on the corners, these were attached to the underside of the top on the corners to make it much easier, which is stiff once loaded so that the grinders stay in position when in use.



12 The central hole is being drilled to take the extension cable. A grommet will be inserted to ensure that the wire does not chafe on the sharp steel edge.



13 Now that I know where the central hole is, a backing board can be created to go inside the top of the cabinet, which will help to secure the hexagon. This has a hole drilled three-quarters of the way through with a Forstner bit, to match that in the top and a channel routed in for the cable to exit out the back of the cabinet.



14 Next, holes for the mounting bolts were created in the round spacer and then transferred onto the cabinet, then through to the backing board.



1. Business offices often have old filing cabinets that they need to get rid of – it is always worth asking!

2. Sometimes a square offcut is better than a try square when laying out lines on board materials

3. It is a good idea to seal/varnish the MDF before assembly

15 Having enlarged the holes in the backing board, and counterbored them, captive prong nuts were hammered into pre-drilled holes, which will support the pivot and central column.



16 The additional large through holes allowed me to place the board in the drawer, partially close it and manoeuvre it to the top of the cabinet, first towards the back and then to the front, up and over a lip in the frame. It also had to be set over to the left to clear the lock. Next, I constructed the central tower. Firstly I ripped the 18mm MDF for the sides and prepared offcuts for the top, bottom and shelves.



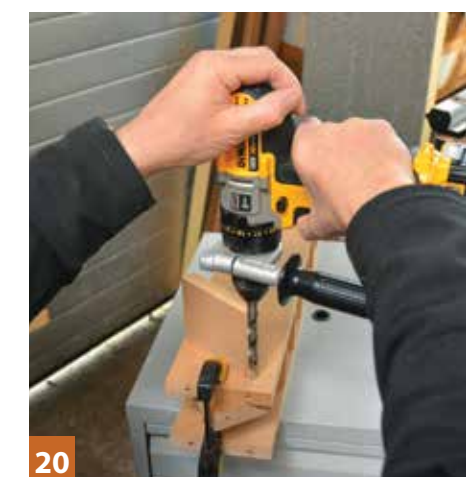
17 Then, I cut grooves to accept the 6mm shelves. This process was made much easier by doing both sides at the same time and using my digital readout so that I could move the fence 70mm between shelf slots, then 3.2mm, which together with the blade kerf, produced a tight groove for the shelves. A spot of glue on each side of the shelves and tapping them together helped to produce a remarkably stiff structure.



18 Having transferred the hole positions to the tower base, accurate drilling is much easier using a drill press.



19 I decided to attach the base to the tower with barrel nuts with counterbored bolts. Though drilling carefully, I realised the holes weren't exactly square. Inserting a drill in the hole and lining up a ruler enabled me to accurately mark the cross holes for the barrel nuts.



20 Drilling the holes for the barrel nuts with a scrap of square wood as a guide to getting the holes plumb.



21 Assembly with a hex socket button machine screw and barrel nuts.



22 I fixed a switched trailing socket to one side of the tower. It was designed to be mounted horizontally on screws registering with keyholes in the back, so I added screws with penny washers to keep it from moving when mounted vertically.

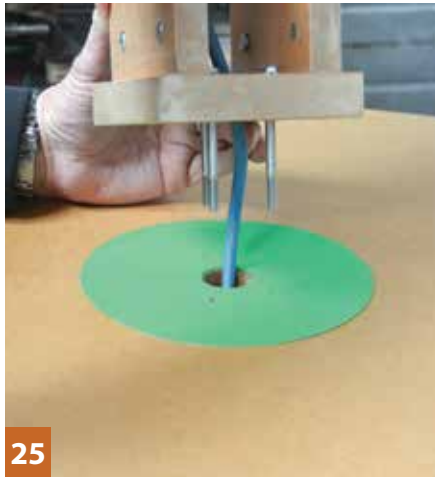
23 I stamped out a large washer from a kitchen chopping mat, together with additional spacers, to ensure that the hexagonal grinder platform rotates smoothly. I threaded the wire through all of the components prior to final assembly.



24 Threading the wire through was easy due to the channel in the backing board. Note the top grommet had been removed as it proved an impediment to installing the wire. It was retained on the wire and reinstalled once the wire had been pulled through.



25 I had already lined up the lower parts with the bolts, which were inserted in the base of the tower and threaded down to the captive nuts.



26 Finally, the tower was installed and the bolts tightened; this ensured that the backing board would be held up against the underside of the cabinet top and not foul the drawer. The crucial part at this stage was to test whether the carousel would rotate sufficiently freely.



27 I decided to measure the bottom drawer up for a reinforced base. I wanted the new drawer base to be a snug fit and realised that I was unlikely to be able to get it out again if it was too tight, so I installed a screw to enable its retrieval until I was happy with the fit. The base was fixed with screws through the drawer sides.



28 I also wanted to incorporate a water cup; however, that meant drilling through the side of the cabinet above the drawer roller slides. To ensure metal swarf didn't get trapped in the slides, my wife held a magnet inside while I drilled the holes.



29 The water cup was mounted on a sliding bar, so that it could readily be brought into use when required and emptied as necessary. I used a stainless cup so corrosion would not be an issue.



30 Finally, the new carousel sits in front of the original one, waiting for the grinders to be installed. ■

