

Dovetail delight



Armed with Trend's new CDJ600 jig, **Alan Holtham** routs some rapid dovetails in the making of this sleek seven drawer maple chest

This chest of drawers for a new office was designed specifically to store drawing equipment and paper. But the brief was also to have a small pull-out shelf to provide a temporary resting place for pencils and instruments whilst the drawing board was being used, hence the top slide.

The rest of the furniture in the office was in maple to a very plain and modern design so this piece had to

follow a similar style. There are no handles or knobs on any of the cupboards or drawers, and the fronts overlap the carcass and are used to open them. The sections are all quite chunky with square edges and just a tiny radius to soften the squareness.

Joint choice

Although the design is very simple, you can make the construction as complicated as you like. I settled on through dovetails for the main carcass and lapped dovetails with applied fronts for the drawers. I couldn't do such work on a commercial basis by hand and rely on my router dovetail jig to make it easier and quicker. If you don't fancy the dovetail bit, use butt joints and biscuits.

Acclimatising

With any hardwood, it's essential that the timber is acclimatised to its eventual environment before you work on it. I bought kiln-dried material, but even so, many timbers — maple in particular — will move considerably if the moisture



content is too high. I'm fortunate in having a centrally-heated workshop so I bring boards in and stand them in a corner for several weeks before I make any attempt to cut them up. Only when I am happy that they're fully stable do I start work, cutting them to approximate sizes on the radial arm saw.

Panel prep

The first job is to make up the panels for the main carcass, I prefer to use lots of narrower pieces than just a couple of wider ones, but lay these out on the bench to make sure that the joints fall in the right place.

Maple is very hard when dry, so take lots of light cuts when you come to plane it up. It's also easier if you've cut the pieces to minimum length as here, but do allow a little waste for cleaning up later. Also, wear suitable eye protection when you're shooting the edges on the planer, as the curly grain on these hard timbers can cause small chunks to chip off as you complete the cut and these can fly up at you with painful results.

Thickening

With one face and edge nice and square, pass all the material through the thicknesser and reduce it to

1 Acclimatise the boards to a centrally-heated environment before use.



2 Lay out boards so that the joints are in the right place.



3 Square up one face and edge on the surface planer, then thickness to the final dimension.



4 Use the circular saw to dimension each board to the right width...



the finished thickness. Take care to orientate the grain direction properly before you feed it through or it'll tear out to quite a depth. This isn't always possible where the grain is very interlocked so some tearing becomes inevitable and has to be dealt with it later.

Many of the boards are too wide to pass on edge through my thicknesser so I get these parallel by passing them through the circular saw with the one planed edge up against the rip fence. You can then either machine plane this rough-sawn edge or use a hand jointer to get it true enough for edge jointing. This latter method is theoretically better, though I regularly assembled machine planed butt joints edges with great success. It's the satisfaction of hand planing a long jointed edge that's personal rather than essential.

Biscuit joints

Once you have the boards ready for jointing, mark out the biscuit positions using a tee square across the width; three biscuits per length is plenty on a side of this size. Use your biscuit jointer to cut the grooves, making sure you keep it firmly on the top surface.

Biscuit joints are only any good if they're perfectly positioned and it's easy to get carried away with the ease of use of the jointer and cut them slightly angled or out of line. Like sycamore, maple tends to produce shavings rather than dust when you saw it, so do make sure that the clogged up grooves are cleaned out before you try and fit the biscuits.

Use a brush to spread an even coat of glue along the edges and into the biscuit grooves, then use plenty of sash cramps to pull the joint together. The cramps shouldn't be used to correct badly prepared joints, as the glue line will soon fail; if they don't pull together perfectly with light pressure then the joint isn't good enough.

Flat surfaces

I prefer to leave the boards cramped up for at least 12 hours and preferably longer, particularly if the atmosphere in the workshop is cold, but do wipe off the excess glue with a damp cloth before it has time to dry. They should be pretty flat when you take them out, so you can use a sander to do the bulk of the cleaning up. I usually use a

CUTTING LIST

Drawer measurements allow some wastage for fitting.

| Item | Qty | Dimensions (LxWxT mm) |
|-------------------------|-----|-----------------------|
| Sides | 2 | 620 x 390 x 20 |
| Top and base | 2 | 440 x 390 x 20 |
| Front drawer rails | 6 | 400 x 60 x 15 |
| Bottom rail | 1 | 400 x 60 x 10 |
| Drawer sides | 12 | 380 x 70 x 15 |
| Drawer sub-fronts/backs | 12 | 396 x 70 x 15 |
| Drawer bases | 6 | 380 x 370 x 6MDF |
| Top | 1 | 450 x 430 x 20 |
| Drawer slide | 1 | 395 x 360 x 15 |
| Drawer slide sub-front | 1 | 395 x 46 x 15 |
| Drawer fronts | 6 | 448 x 84 x 20 |
| Drawer slide front | 1 | 448 x 50 x 20 |
| Drawer runners | | approx 5m x 15 x 6 |
| Back (MDF) | 1 | 600 x 420 x 6 |

heavy-duty orbital for this, taking adequate steps to control the dust that it generates. A belt sander is another possibility but these tend to be rather fierce and you can easily end up with a 'ploughed field' effect, so take care. A final work over with a sharp cabinet scraper should remove the finishing marks and finally level the surface.

Sizing the panels

You can now cut the panels to size; I started by crosscutting them on a circular saw with the sliding table, leaving them a couple of millimetres oversize, then clamped them together and ran the ends over the planer as one. This should leave perfectly straight and square ends, though there's often a bit of splintering on the edge

5 ... then skim the edges with a sharp hand plane for perfect butt joints.



6 Use a tee square to mark the biscuit positions across the board joints.



7 Cut the slots carefully with a biscuit jointer or a biscuit cutter in a router.



8 Make sure you clean out any shavings before inserting the biscuits.

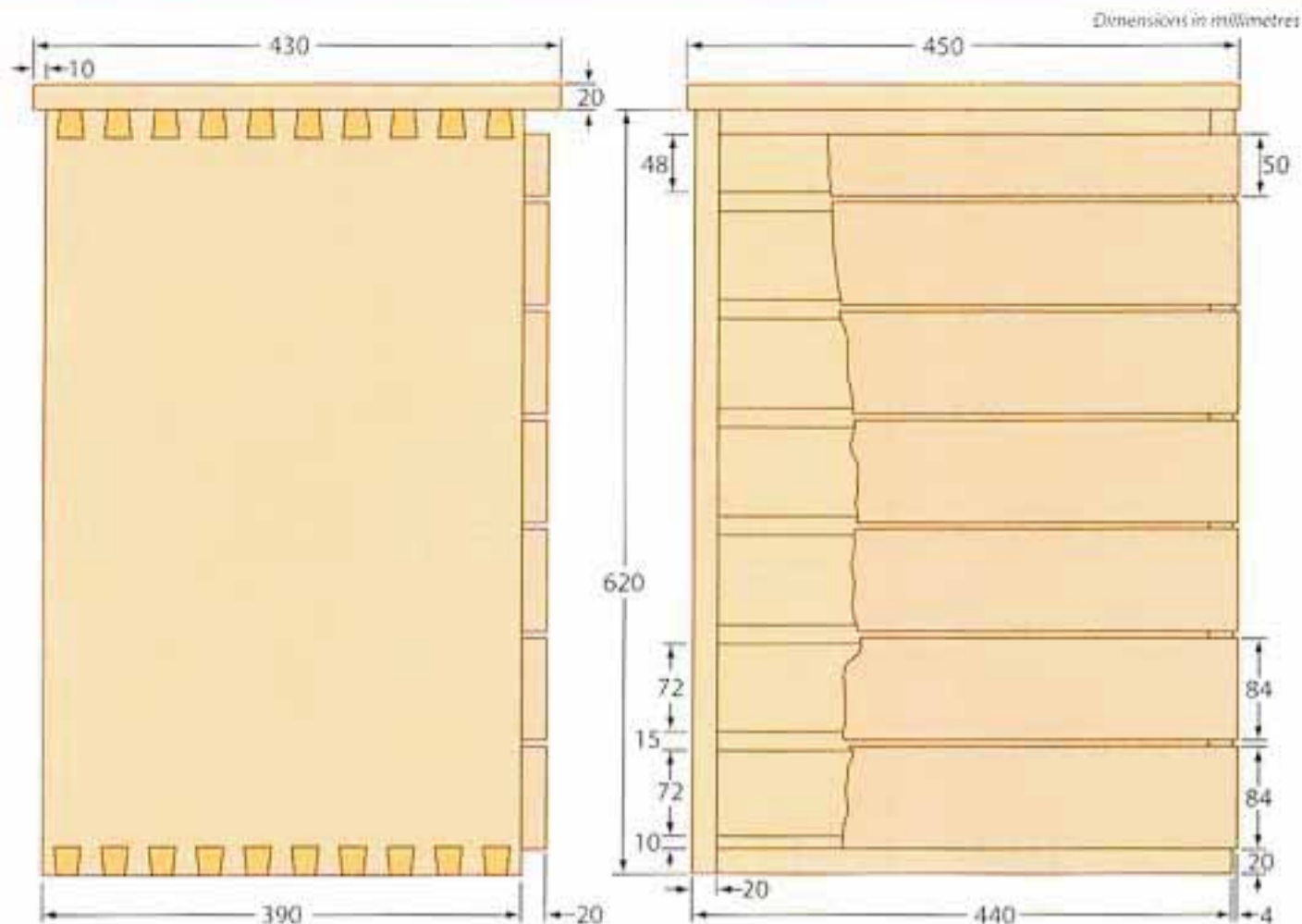


9 Use a brush to spread the glue evenly into each slot and along the jointing edges.



10 Insert the biscuits then clamp the panels to pull the joints together.





Also make sure you use the right size of guide bush for the template and get it properly centred in the router before you start any cuts.

Routing the joints

This very straightforward once the jig has been set up correctly, but you'll need to make several trial cuts before you get there, so do machine up some matching scrap material when you're preparing the main components. Once all the tails are cut, change the template to cut the pins, which also needs a different cutter.

On through dovetails like these, each half of the joint has to be cut separately so there has to be a sacrificial piece of scrap at the back of the joint to prevent any breakout. This scrap also needs to be about 5mm thicker than your work piece to prevent the cutter fouling on the jig itself.

The joint should go together with gentle persuasion from a mallet and scrap block. You shouldn't have to really hammer it home or parts will start breaking off. If it's too tight the jig or router depth will have to be adjusted.

as you finish the cut. Clean this up by planing the edges to final size, again leaving the clamps in position and planing the two halves as one. Getting the ends this accurate is essential if the cabinet is to go together properly at the assembly stage, and particularly as I'm

using dovetail joints which don't allow any further lining up.

Jig setup

Clamp the pieces in the dovetail jig, remembering to orientate them correctly so that the joints will all go together the right way

round. For absolute precision in the joint it's vital to use a fine height adjuster on the router; the difference between the joint being tight or loose is often only a minute adjustment on the router which you can't achieve with the normal plunge mechanism.

11 Use an orbital sander for initial surface preparation.



12 Then finish off with a hand scraper used along the grain.



13 Use a circular saw, ideally with sliding table, to accurately crosscut the panels.



14 Clamp the panels together and plane the ends as one to achieve perfectly straight and square ends.



15 Set up the dovetail jig ready to cut the tails on the sides.



16 Fit an appropriate template guide bush into the base of the router.



Drawer rails

Before the main carcass can be assembled, the front drawer rails need to be fixed in position. I cut these out from some wider material, and although it seems a shame to cut up wide stock into narrow pieces, it's usually far less wasteful in the end. Carefully mark the centre on the end of these supports and then cut a biscuit slot. There's very little margin for error so take care to line up the jointer on your centre markings.

Use a straightedge across the two sides as a guide for the jointer to cut the matching slot for the rails. Once the first one is in place, use a spacer to position the next one and keep repeating up the sides. Using this method the slots

have to match and the openings will be identical.

Carcass assembly

With all the joints cut, you can now assemble the carcass, using a brush to spread an even coat of glue over the dovetails, then a couple of sash cramps to pull it all together. Do check for squareness before you leave it all to set — it's too late when you take the cramps off!

Drawer parts

Whilst the carcass is in cramps, start preparing the stock for the drawers. I used a temporary stop on my radial arm saw fence to get the lengths identical.

Lay the components for each drawer out in order and mark the ends carefully; they have to be cut in the jig

in a set sequence or they won't go together.

The lap dovetail joint for the drawer is slightly different in that both halves of the joint are cut together so it's much quicker. Just ensure that each piece is up hard against the offset stop of the jig or the joint won't be level.

Back rebate

By the time you've finished all this, the main carcass should be dry, so you need to put in the rebate for the back using a bearing guided cutter in the router. As there's only a very small surface to run along, I clamped a piece of 50mm timber along the edge to give me more support for the base of the router. Cutting the rebate in situ obviously leaves rounded

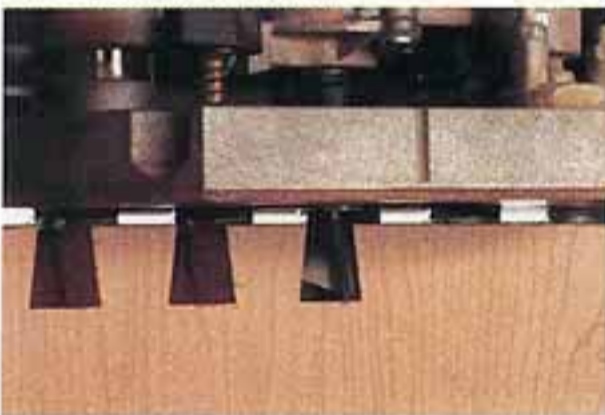
corners which you can leave or square out with a chisel. I chose to leave them and radiused the corners of the back to suit. I also applied a coat of the finish to the inside of the carcass to maintain stability when the outside was treated.

Drawer work

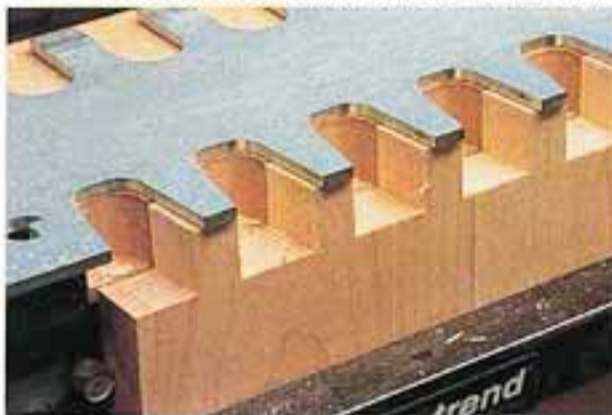
Back on the drawers, the only thing left to do is run in a 6mm slot for the MDF drawer bottom. Ideally, this is done on the router table feeding slowly to minimise the vibration set up with such a narrow cutter. Maple is extremely hard and needs gentle feed pressures when you're machining it.

Before the drawers can be finally assembled, clean up the insides with a sander using a router mat on the bench to hold them in place.

17 Run the router around the template to form the dovetails.



18 Change the template to cut the pins, with a piece of scrap behind to prevent breakout.



19 The joints should only need gentle persuasion to fit together.



20 Prepare the stock for the drawer rails and mark the centrelines.



21 Use a biscuit jointer to cut the slots, making sure the jointer is lined up properly.



22 Use a straightedge clamped across the two sides to cut in the biscuit slots.



23 Use a prepared spacer to mark the next shelf support position.



24 Repeat this down the length of the sides.



25 brush glue onto all the joint faces, then assemble the carcass.



If you haven't tried a router mat before do get one; they make it so easy to hold small components for routing or sanding and also prevent any damage to finished surfaces.

Slide the MDF bottoms in place and glue up each drawer, again paying attention to get it properly square. If it's at all out it won't slide properly in the

carcase, so it's important to keep checking.

False fronts

To keep the overlap even at the bottom, the lower drawer will need a spacer to run on, so glue and pin this in place. Each drawer is fitted individually and then the false front is planted on afterwards.

These are just straight pieces with all the edges slightly radiused, and are about 8mm wider than the main carcase. They're fitted by gluing and screwing through from the back with a central screw, which allows you to tweak the alignment when the drawer is in place and you can then clamp it firmly until the glue sets.

Repeat the procedure for the next drawer, gluing and pinning the drawer runners in place as you go. There needs to be a small amount of clearance all round the drawer for it to slide easily, but don't overdo it or they'll jam. Use a spacer between the drawer fronts to get the gap even as you fix each one.

26 Hold it together with sash cramps checking for squareness.



27 Label the drawer ends carefully so they are orientated correctly in the dovetail jig.



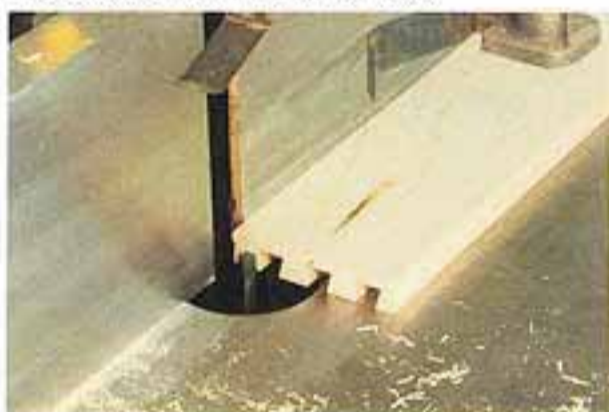
28 Both parts of the lap dovetail joint are cut together.



29 Run a rebate around the back of the cabinet using a temporary support.



30 Rout a slot for the drawer bottoms on the router table.



31 Sand the inside of the drawer components before assembly.



32 Assemble each draw with its 6mm MDF base.



33 Fit the 10mm thick bottom drawer rail.



34 Machine up the drawer fronts with a tiny radius on all edges.



35 Screw the drawer fronts on from the inside.



Top and slide

The top is another plain panel cut to overhang the carcass with the same small radius; just clamp and glue this in place, making sure the overlap is even.

The top pull out slide is fitted in the same way as the drawers, using a runner on top as well to stop it tipping as it's pulled out.

is screwed onto the front edge of this slide then another front is planted on in the same way as the drawers.

If you're worried about the top slide being pulled right out, you can fix a small block on the underside. This will then stop up against the bottom front rail as the slide comes out.

Back panel

Fit the back by shaping the 6mm MDF to fit the radiused corners of the rebate, then glue and pin it in place. I like to cut the recess slightly deeper than the thickness of the back so that nothing is visible when the chest is viewed from the side.

Finally, give the whole thing a thorough sanding,

working down to about 220 grit. I used a brush-on pre-catalysed lacquer which dries very quickly and you can soon build up several coats, flattening down between for a silky smooth finish.

Lastly, fit the castors onto the bottom, setting them well back so they aren't obviously visible and your chest of drawers is complete.

36 Carefully position each drawer front, then clamp in place until the glue sets.



37 Fit the drawer runners by gluing and pinning them to the sides.



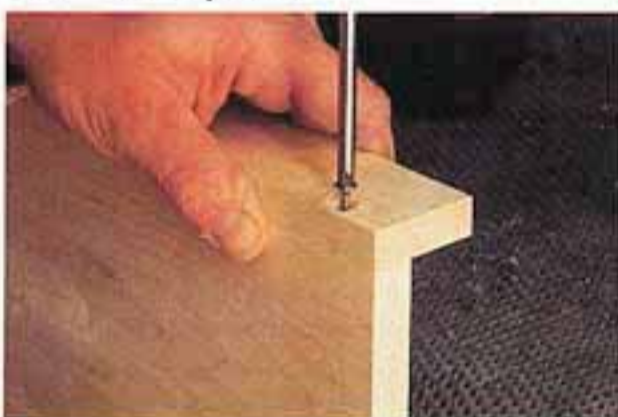
38 Cut the top to overhang the carcass then glue and clamp it in place.



39 Check that the drawers finish a few millimetres clear of the back.



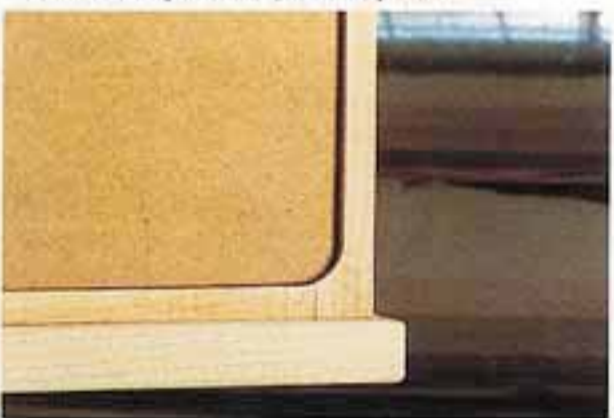
40 Screw on the front of the top slide.



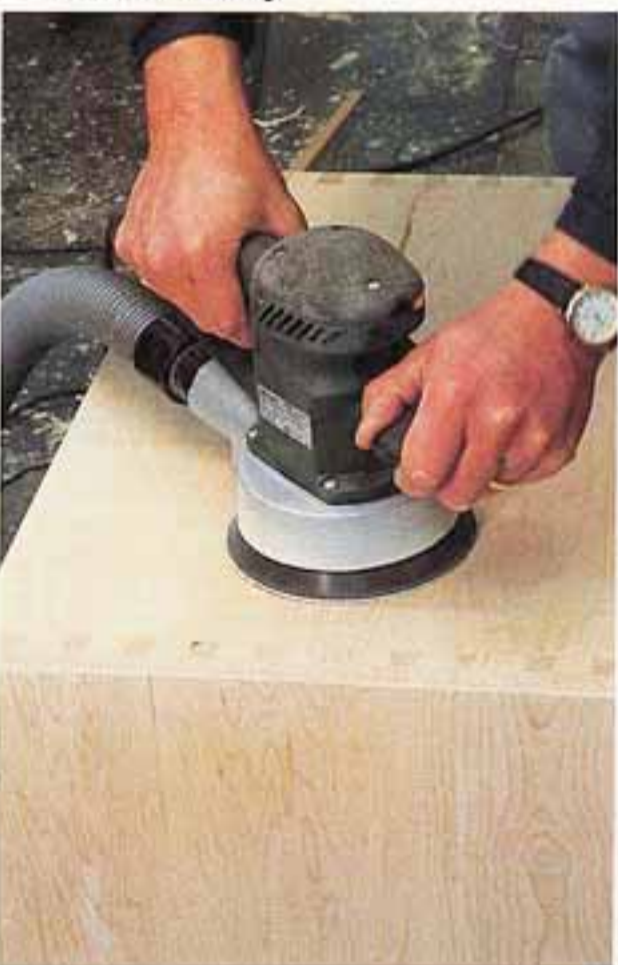
41 Use the two drawer runners on top of the slide to guide it.



42 Shape the corners of the MDF back then glue and pin it in place.



43 Give the carcass a final sanding.



45 The finished chest after three coats of brush-on lacquer.



44 Screw the castors onto the base.

