Detailed Dovetailing

A practice joint, a Moorish dovetail and other info.

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Some Surprising Information about Dovetails

Notes from The Forest Products Research Laboratory tests (by KS Walker) reported in Woodworker January 1958

Machine-cut dovetails were made on a single-spindle moulder with the aid of a dovetailing attachment. For most of the tests, cutters without wings were used. Some tests were made with winged cutters but no quality difference was reported.

Caveat

Note that this means that the bottoms of the lapped dovetail sockets would be rounded, and the hidden parts of the tails likewise. Hence the tests are not strictly comparable to hand-made joints (or router jig imitations), but it seems (to me) reasonable to assume that the principal conclusions will apply.

All dimensions other than the included angle were kept constant. The width of the dovetails were constant at half-height. Board width = 6", thickness of tail bearer = 1/2", pin bearer = 3/4", pin height = 1/2", pitch = 1", included angles were 15deg, 21deg, 27deg, 35.5deg. He pointed out that the British Standard 1186, quality of workmanship gave 14.5 deg as the minimum included angle. It does (did?) not quote a maximum angle.

To a bench woodworker, the angles would have been: 1 in 7-1/2 (7.5deg), 1 in 5-1/4 (10.5deg), 1 in 4 (13.5deg) and 1 in 3-1/4 (17.75deg). Note:1 in 8 = 7.12deg, 1 in 6 = 9.46deg. Unless they made

their own cutters, the angles chosen might have depended on the cutters generally available..

The joints were tested by a direct pull on a hydraulic testing machine, the socket board being horizontal.

Species

African Mahogany (Kahya Ivorensis), Whitewood (Picea abies). All samples for each species were cut from the same baulk to minimise differences due to variability of natural material.

Dry un-glued joints

16 tests on mahogany, and 40 on whitewood. As the strain was imposed, the load first rose steadily while visual examination showed a "stretching" with elastic deformation of the tails and to a lesser extent, the pins.

As the strain increased a point was reached at which the load dropped momentarily before continuing to rise. This discontinuity in load was due to the slipping relative to one another of the two parts of the joint.

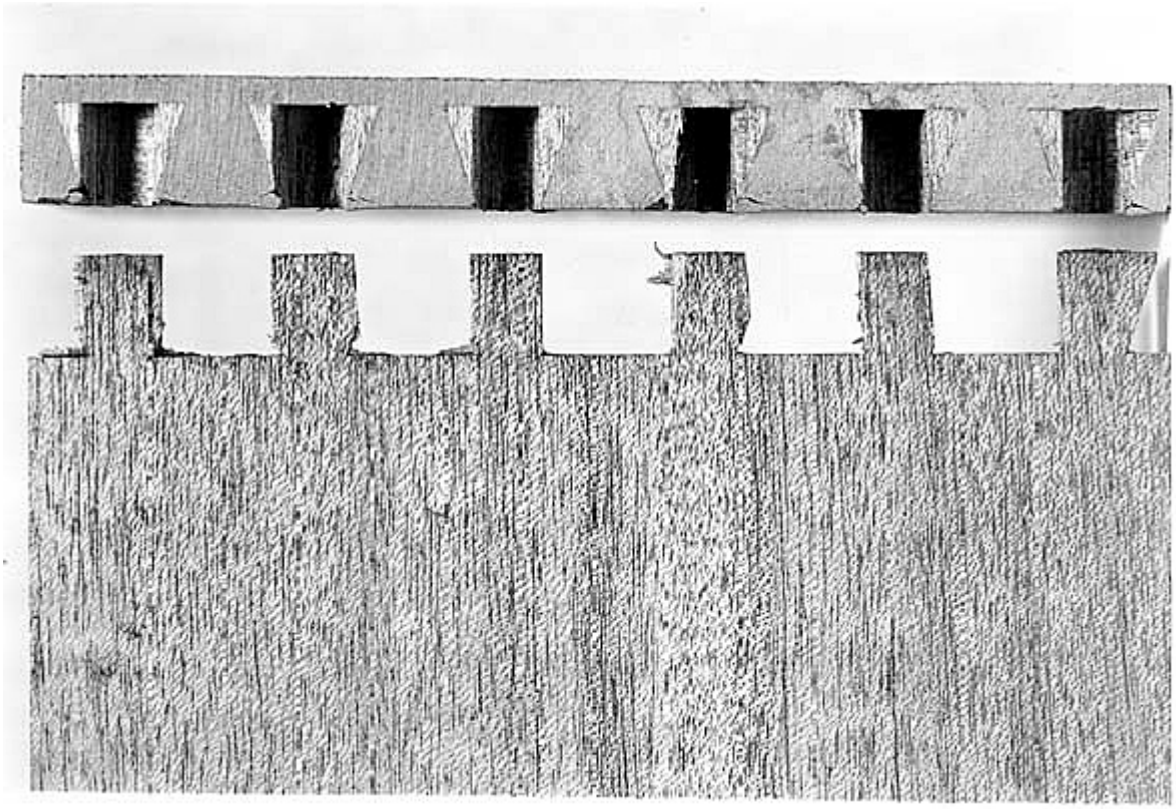
The applied load was between 1000 and 1700 lbs on a 6" wide joint in mahogany. This was regarded as the point at which the joint would have failed in service. By continuing to pull to complete destruction, it was found that joints could bear between half and one ton.

At first slip (ie the above point) all failures were the same, ie compression of the tails fanwise permitting the slip. At ultimate destruction, there were several modes of failure.

At 15 deg., tails closed up fanwise sufficiently to slide out, with only a slight tendency for the top corners around the recesses to break along the grain and pull up. This latter mode of failure became more marked with increasing angle until at 35.5deg large pieces of the socket bearer were pulled up. In the whitewood all the joints failed by the tails closing up, even at 35.5deg. These subsequently opened out again, almost to their original size.

Glued joints

Mahogany only used. Tested four days after gluing with an urea-formaldehyde glue and separate-application hardener. All joints regardless of angle failed by shear along the short grain, leaving wedge-shaped sections behind in the sockets.



The surprise

An unexpected result was that the ultimate load for the larger angles should be less when the joints were glued than when dry. They seem to put this down to the wedging action of the dry joints putting the tails into compression across the grain, thus increasing the shear strength across the grain.

Small included angles are often favoured for machine dovetailing as giving a stronger cutter.

The larger angles may be considered to appear stronger, but the results of these tests show that, where the gluing of the joint can be absolutely relied on, there is no gain in employing included angles wider than 15 deg (1 in 7-1/2), while if the gluing is not taken into account, the wider the angle the stronger the joint, up to the 35.5deg (1 in 3-1/4) tested.

Tails or Pins First?

Tails First

Marking out

It is more difficult to make mistakes. For example you are unlikely to draw shovetails.

It is usually preferable to work so that you face the workpiece surface that will be visible on the finished job. You can therefore mark the tail outlines on the outside face.

Scribing the mating part

It is usually easier to align the pin and tail bearers for the scribing operation.

If you are making fine cabinetmaker's dovetails, you have to scribe inside a small dark space, usually having to use an awl or a very thin knife blade. It can be difficult to be quite sure that the marking tool has not wandered.

However, the marking tool will be working onto end grain, possibly with a reduced chance of the tool following the grain.

It is again possible to scribe the lines for the pin sides on the outside face.

To overcome this some people offer the tail bearer to the pin bearer before they open the sockets. They insert their dovetail saw into the kerf

and with a backwards pull, use the leading teeth of the saw to scribe the end of the board

Tickling up

Prior to the scribing stage it is prudent to check for any small inaccuracies. This also means working inside a cramped space. If you make lapped dovetails (half-blind dovetails to the Murricans) it is easier to make the tails first.

Pins First

It is easier to make a serious mistake. You have to take care that the broadest part of the pin is on the inside of the job, ie the face-side

Scribing the tails from the pins means holding the pin bearer upright against the face of the tail bearer. This can be difficult if the job is a big one, eg a bookcase on which through dovetails are visible from the bookcase sides.

Since in this case you are scribing onto face grain, the marking tool can be prone to following the grain.

There is usually plenty of room between the pins for the pencil or other marking tool to to reach. The results of the scribing are easily verifiable.

However, the scribed lines have to be made on the inside face of the job - see opposite, above. Working from the inside face can mean that you can be not quite sure about the quality of the kerf on the other side.

Tickling up

It is easier to see and rectify any small inaccuracies.

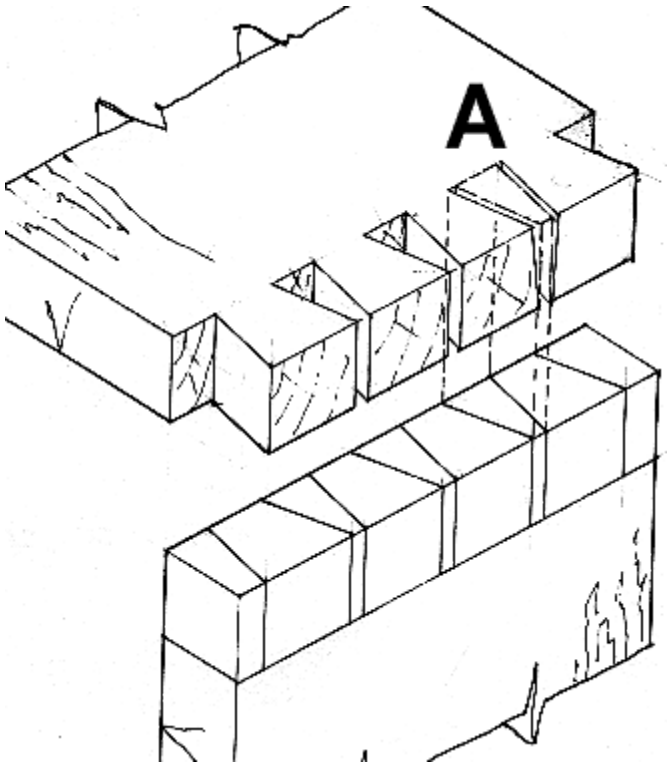
Whatever you decide

A cautionary word

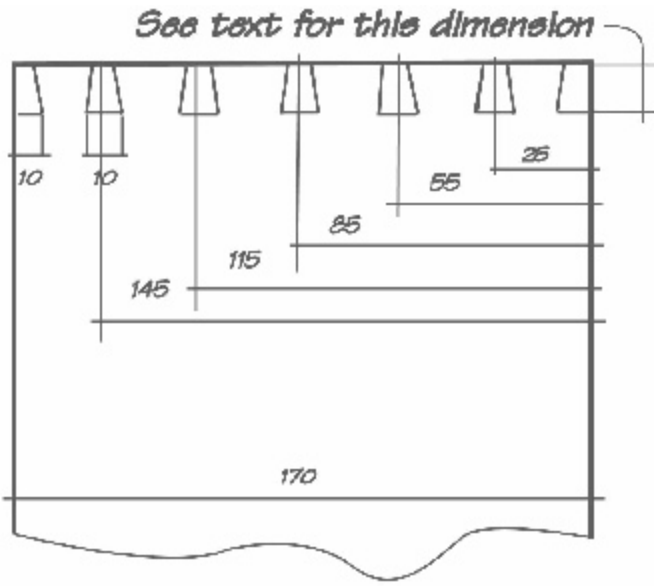
Right: Whether you make tails first, or the pins first, you will scribe the marks from the surface that is not visible on the finished job. In the 'tails first' case, this will be the surface indicated on the diagram by the downwards-pointing face-edge mark. In other words, the pins will be marked onto the shape of the underside of the tail bearer, ie the part you do not see when the job is glued-up.

This implies that the mating part must have sockets with flanks that are at right-angles to the face side (but see my tweaking tip).

Otherwise, as in the tapered socket marked 'A' , although there is a correct outline on the underside of the tail bearer (ie at the entrance to the socket) you'll get an unwelcome gap round the pins. Other forms of error can lead to a joint that is too tight or even to broken pins from an over-enthusiastic assembly.


A

A Set Of Practice Dovetails



If you have seen the text in A Bookcase in Oak you will have noticed that pins and tails can be made so that,until the surface of the job is planed during 'cleaning up', they lie recessed slightly beneath the surface, as also illustrated below.

In this case the un-labelled dimension can be 1 mm (1/32) less than the thickness of the mating part.

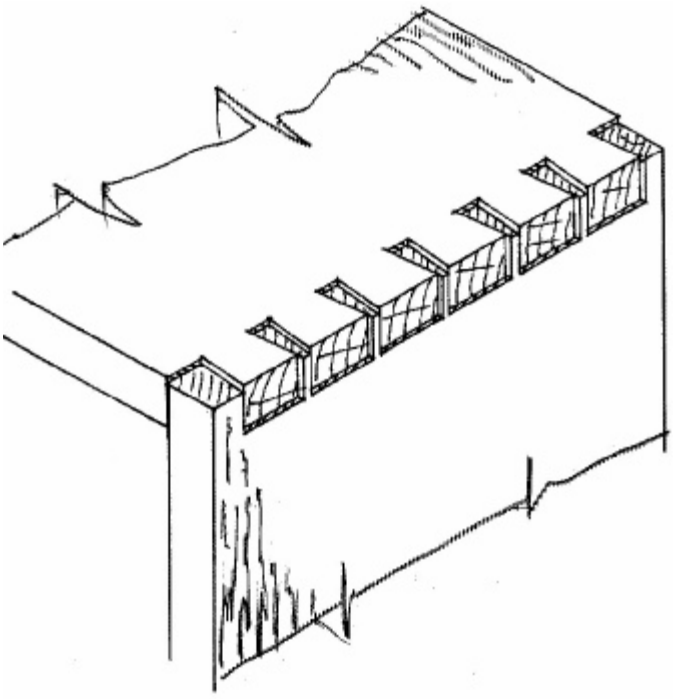
Otherwise, the dimension indicated in the drawing can be made 2 (3/32 in) mm greater than the thickness of the mating part, thus allowing the pins and tail ends to project. This is the easier way if you are not yet hot at dovetailing.

Right: A somewhat exaggerated view of such a dovetail prior to cleaning up.

It is usual for the pin spacing to be made closer towards the sides of a carcase. This is a precaution against the panels warping over a period of time.

I've shown fairly clumsy pins. For fine work they can be made somewhat narrower.

Don't make them too narrow or you will find that starting the saw will be very tricky. Also, if they are made too flimsy and the job turns out too tight, they can be ripped from their sockets when the job is knocked apart.



Dovetailing Detailed - A Practice Joint

It is best to use a fairly resistant wood. The fibres of many pines will crush too easily when you try to pare the pin and socket floors. American Whitewood (Tulip tree wood) or a mild oak or mahogany would be suitable.

1. Set out the centre lines as indicated above.

2. Mark lines 2.5 mm each side of the centre lines.

3. Square these lines across the top edge..

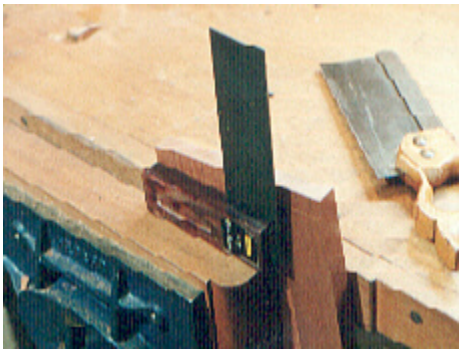
In this case I have decided to make the tails first.

4. Use the dovetail templet to mark out the pin sockets (or tails if you prefer).

Sawing Dovetails

Use a dovetail saw that looks like a tenon saw but has a thinner plate with fine teeth. Use one with a closed handle. Complete beginners might find a slightly blunt saw easier to use. (Less likelihood of jamming).

Some years ago I somehow got into the habit of holding a dovetail saw this way. This brings the action is more directly in line with the teeth, yet the vertical component of the cut is more controllable.



Make sure that the wood is as low as possible in the vice or it will vibrate. If sawing tail sockets, you could try tilting the wood in the vice so that the line in question is vertical, though some people say this makes it even harder.

Check the lighting. The line should be between the light and the saw.

Make sure you are standing comfortably. Balance most of your upper-body weight on the N-S hand. Use a boxer's stance, feet apart. N-S foot forward of the other.

Grip with the thumb against one side of the of handle and the index finger on the other.

Check that the tip of the saw, your wrist and shoulder joint lie in the same plane

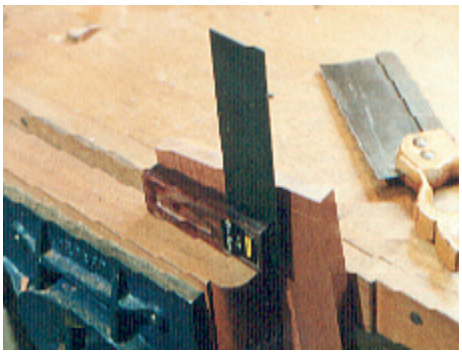
Grasp the top of the workpiece and rest the plate of the saw against the tip of the nail of your extended index finger of your non-sawing (N-S) hand.

Balance the sideways pressures between the saw and finger so that the teeth will be in the waste but just grazing the side of the line. (Whatever tool was used to create the line, you will have to saw to the side of the line. 'Splitting the line' would be a serious error).

Apply Woodworking Zen. Breath naturally. Relax. It's a bit like swimming, you need to apply force to those parts that need it, yet at the same time relax the rest of your body.

Lift the saw against its own weight and apply a featherlight touch, otherwise the sharp teeth will dig in. If this happens you will then press like fury and things will go wrong from there onwards. A forced saw will probably follow the grain.

The conventional grip



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Start sawing at the back edge with the saw making only a very small angle with the wood surface. Otherwise, if starting on the front edge, the the gullets of the teeth tend to lock into the front corner.

Take your time. If you make progress slowly, the saw will not go too deeply with each cut and the natural feedback process will enable you to correct the saw orientation.

Blow away the sawdust between each forward stroke

Once started, saw with the teeth inclined somewhat upwards. The saw will work more easily because you are sawing more with the grain than across it. Continue until you get to the shoulder line.

(Sawing a tenon involves a rigmarole of sawing from each side of the workpiece, but this is rarely necessary for dovetails).

As you work, keep your eye on the shadows between the side of the saw and the kerf. They should appear as dark bands with parallel edges.

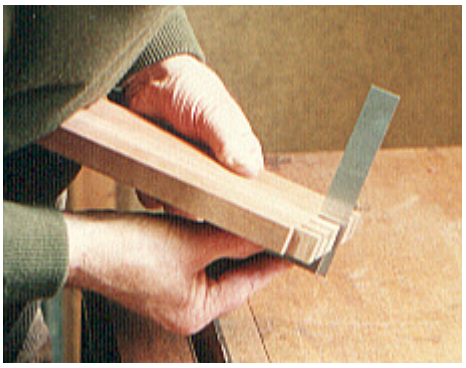
Dovetail Tips in Pics - Sockets

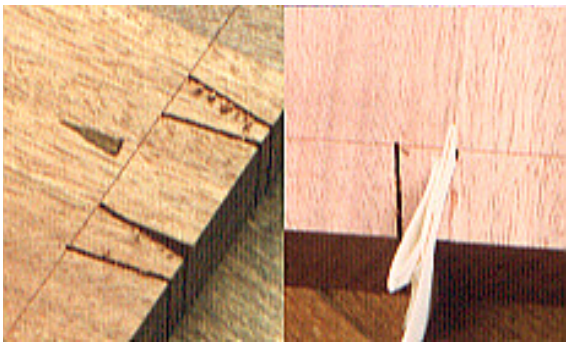
Right: Check the socket floors. Ensure that they are not hump-backed and are square to the face side.

If you undercut, only undercut the central half of the floor.

Leave a generous land on each surface, especially the outer surface which will be affected by the plane when the job is cleaned up.

An engineer's square makes the job a bit easier.

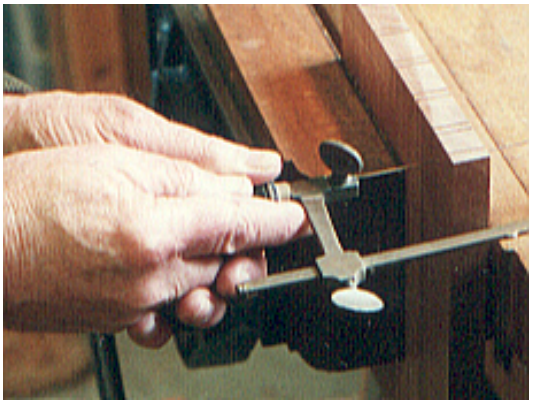




As the kerfs were cut, a small shake in the end grain caused this chip to fall away. Since this was so tiny, it was glued with a water-soluble adhesive to a slip of paper. Superglue was applied to the side of the kerf. The paper was easily manipulated into place.

The paper was torn away and finally removed after the socket was opened.

Note the correct grip on this jeweller's saw. It has been fitted with a coarse fretsaw blade. A coping saw will serve almost as well, though the set can be a little thick for some dovetail saw kerfs.



Finish this stage by paring with a bevelled edge firmer chisel

Some people prefer just to chop out the waste, though this can sometime lead to voids in areas if the socket floors. Providing that these are in the central area of the floors, it usually doesn't matter very much. However, if the sides of the job have to be shaped extensively, it can matter if your plane eventually reveals the voids.

Working from each side and starting just below the sawcut, gradually work down to the knife/gauge line.

A thump from the butt of the hand is often sufficient, but a mallet might sometimes be necessary.

Note how the guiding arm is supported by the generously-broad vice clamp.

With the chisel horizontal, and also working from each side, start the chisel on the crown of the hump you have formed. gradually work down to the knife line.

If undercutting, leave a generous land on each surface, especially the outer surface which will be affected by the plane when the job is cleaned up.

The change of grip indicates a more delicate action for the final levelling.

If you do decide to undercut the socket floor, only undercut the central area.

Ready for the final stroke or two, the chisel tip is just resting on the witness markleft by the knife line.

The left hand is now on the vice top.

Note: If the flanks of the pin sockets are not parallel and square to the face side, an ill-fitting joint looms ahead. Whenever tweaking a cut, try to tweak to a definite line. Just blindly fiddling and faffing will often make things worse.

A sharp marking knife is being used to scribe a new line to pare to.

Some canny vertical paring will be needed. A good reason for not having the pins too slender.

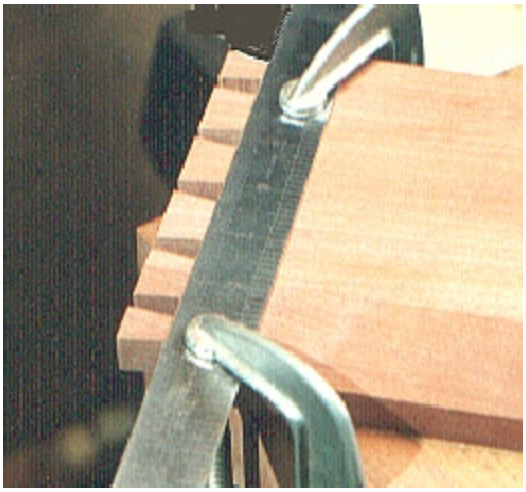
If they are too slender, you won't be able to get the chisel into the space..

A proper paring chisel (thinner than the bevelled edge firmer chisel in use) will be ideal for this job.

Dovetail Tips in Pics - Pins

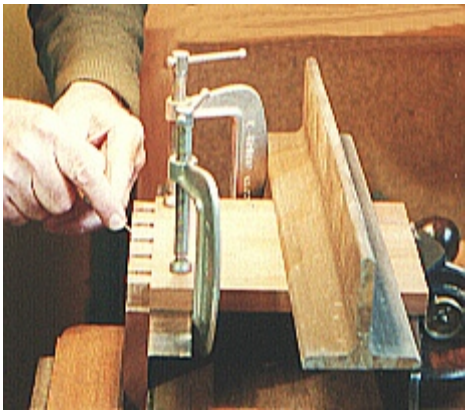
Tails-firsters cut the tails, which form the sockets for the pins.

The pins are then marked directly by scribing inside the pin sockets.



Since so many things can go wrong when scribing the pins from the tails, use a ruler to aid registration.

One trick to get a good fit is to put the ruler's edge a gnat's whisker's distance below the line.



This practice joint is supported by the jack plane and held in place by a weight. The rule gets the alignment right.

Ensure that the face edges align properly.

Here an awl is used for scribing. Some people make a slim knife from an old hacksaw blade.

Since there is more wood to remove, the mallet will probably be necessary now.

As with the pin sockets, start paring at the hump formed by the above sloping cuts and level the tail socket floors.

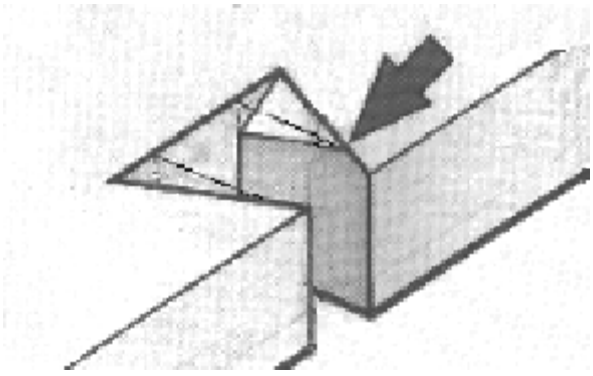
If you must undercut, only undercut the central area. Leave a generous land on each surface, especially the outer surface which will be affected by the plane when the job is cleaned up.

Before attempting a trial fit, chamfer the underside of the sockets as shown.

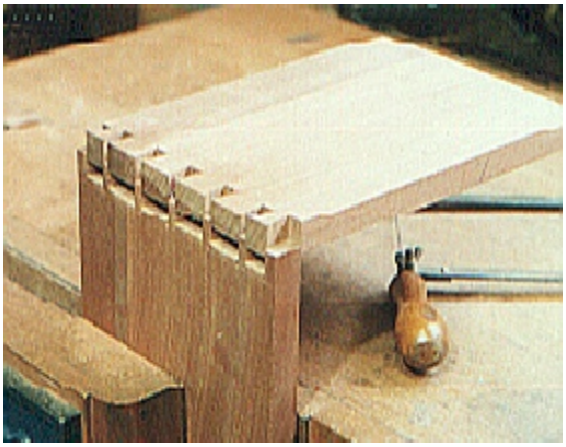
This should be the face side. Think twice!

Because it would show, the front corner (arrowed) is not chamfered.

If these arises are left square, as the sharp arises of the pins drive into the socket, the top edges can crumble and be carried into the socket with the pins.



Burnishing and compressing the pins is not really very good for adhesion, so gingerly mate the two parts down about a third of the final depth. Well, that's the theory!




If you leave waste on the ends of the boards, you'll need to use a notched batten to apply the closing force in the right places.

This is the stage at which very slender pins risk being uprooted.

Avoid separating the parts by waggling them. Use a batten instead.


If an upside-down shampoo bottle is used, the glue will always be at the nozzle end.

An ice lolly stick makes an adequate spreader.

If there are several joints to be glued,.recruit a second pair of hands.

Once the joints are fully home, remove the surplus glue. The water will do wonders for the fit of a good joint, though much less if there are considerable gaps.

Cleaning up with a finely-set smoothing plane.

For stripey mahogany like this you need a very fine shaving aperture.

A good-quality standard production plane, tuned-up with a bit of tender loving care is all you need to produce a tear-free finish.

Where you start can matter

To illustrate this point, I chose to use a standard tradesman's very time-friendly dovetailing technique on a piece of very soft, quickly-grown pine.

It was actually a floorboard offcut, not really suitable for even moderate-quality woodworking.

I worked 'pins first', following the usual routine of marking the pin profiles and their flanks and then used a dovetail saw to cut down to the tail socket base lines.

To remove the waste between the saw cuts, I deliberately chose to start to chop on what, on a real job,would be its inside face.The chisel started half-way down the tail socket with its bevel facing end-wards. I worked towards the base line by making the three cuts you see on the underside of the photo. Following custom, I then turned the wood over and repeated from the other side. On the right, the chisel is shown part-way through the penultimate cut.

The force of the final blow was taken by the nib of wood you can see just below the chisel.

As the cut progressed, the un-supported wood fibres bent and then broke so that the fibres were torn out by their roots, thereby leaving a void.

During the final cut, the fibres were therefore hanging over thin air, as it were, so the force of the blow also made them break out. (From experience I knew that the chisel would crash through, so I protected the bench top with a chopping board).

A sectional view of a nearly-complete cut. The wood just below the chisel edge will get no support from the chips below it.

The result seen from above.

The remaining waste has yet to be removed from the sides. It happened that a loose chip partly conceals the actual cavity, though the next photo reveals the true state of affairs.

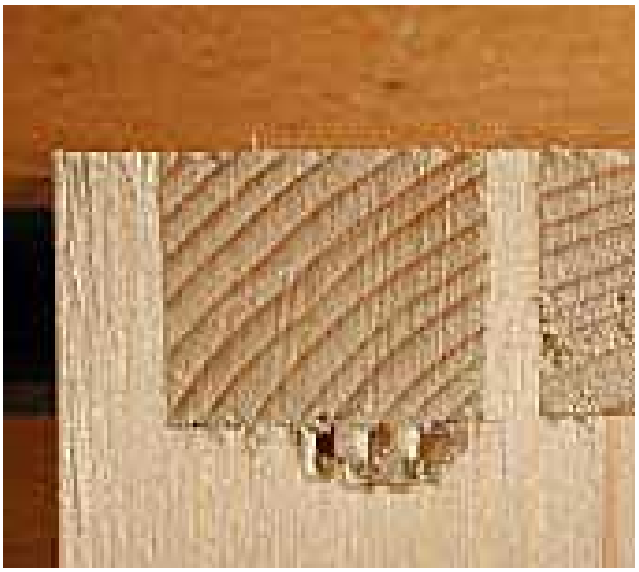
The gap made by the fracture is very close to the outer face of the job. Its border is formed by the knife line.

On full completion of this stage, all the socket floors (lands) will have similar cavities. The fastidious worker might find them unsatisfactory.

Do They Really Matter? A City & Guilds or GCE (UK examinations) examiner might, when looking at test pieces, be somewhat aghast at this sight, but as far as the strength of a proper job is concerned, the answer might be ’really not very much’. After all, we do know that end-grain does not adequately bond, so the loss of gluing area need not be very important.

What really can matter, is just where the cavities appear. You can see that one side of this particular cavity is only a knife line’s depth from the wood’s surface, ie the outer surface of a real workpiece. The outer surface is, of course the surface that almost invariably has to be planed after gluing-up.

The cavity is revealed as the plane cleans-up the outside of the joint. Because the above cavity was so near to the surface, it only needed a few strokes of the smoothing plane to reveal the kind of disaster you see illustrated.



Had I started chopping from the outside face, the same thing could have happened, yet the void would have been near the inside face of the job.

Unless we actually want to loosen the dovetails, we should never plane the inside face of the pin-bearing piece; therefore being on the inside face, this void should remain untouched by a plane.

An alternative routine:

This might take rather more time, yet you can still get some speed with better quality surfaces and no cavities. Chop vertically, eventually going up to half-way through from each side, but with the bevel facing the base line.

This produces these sloping surfaces and a humped floor.

Horizontally paring the hump.

(On very soft wood, you will need an ultra-sharp chisel).

Conclusion

While swift, chopping as described in the first four pictures is a pretty brutal business that will always create similar cavities. Thankfully they are usually smaller, and the expert ensures that they occur in the centre of the socket floors.

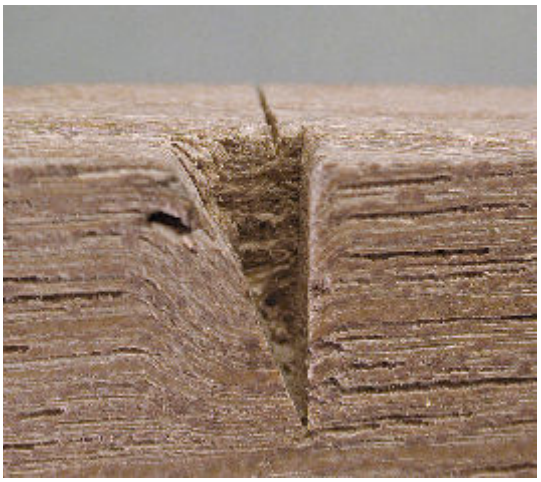
Over the years I have seen various stratagems that, while still relying on chopping strokes, painstakingly seek to overcome the cavity problem, but I fear that I have not yet been able to make them work. Maybe I did not try hard enough!

Chopping up to a line

I've been driving a 1/2in bevelled edge firmer chisel into a piece of an Elm look-alike (Japanese Sen, Kalopanax.spp). The idea was to replicate a basic woodworking task - chopping out waste.

Chopping is one of the hard-pressed tradesman's ways of removing wood from between the pins of a set of dovetails.

Firstly, I photographed the result of a single chop where the chisel was placed directly in the incision made by a marking knife. As it was driven, the sharp edge severed the wood fibres. These were then forced downwards and backwards by the bevel until the wood was so compressed that the chisel became wedged firmly into place.



Note the distortion of the fibres revealed in the pic.

During the downward progress, the wedging action eventually moved the chisel face rightwards and well beyond its starting place, compressing and bending the fibres in its path. An engineer might say

that the reaction of the fibres against the bevel is the cause of the displacement. This measured about 0.52mm (21 thou).

Right: The result of making three widely-spaced chopping cuts, moving from left to the right and finishing in a knifed line.

But note that the face of the cut has still been driven slightly to the right of the line. Perhaps the error does not look very great?

Left: A contrived view made by removing the left-hand part of the above pic and substituting an end-grain view representing a component against which it fits

.

It shows the discrepancy that I think it would be glaringly evident if this gap had appeared on a real job. This time, the error is about 0.3mm .

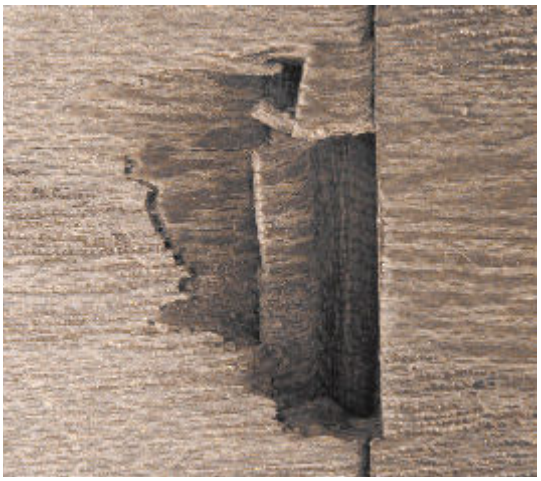
Chopping has the effect of compacting the chips so closely together that I've had to enhance the pic by marking the 'fault lines' between the chips.

They show that the distances between the cuts were such that quite a thick section of wood had to be sheared with each chop. This made each cut had to work nearly as hard as cutting into virgin wood and with a similar, though reduced, effect

Approaching the line in closer steps has enabled the chisel to finish just where it was intended

An Inevitable Cavity. When you complete the operation by chopping from the opposite face, the inevitable result is the sudden fracture of the last few fibres leaving a cavity in the end grain of the job. End grain does not take glue very well at all, so for some classes of work the loss of gluing area does not matter

Sometimes one has to take care that a cavity is not revealed when for example, producing a test piece for an examiner, or by operations such as sawing a box apart to form a lid, or perhaps planing its sides for some decorative purpose.



In soft or thin material you could actually get away with a minimum of two cuts, but take heed of this pic, the outcome of a bit of simulated carelessness. The first cut established the essential void, but the chisel moved slightly downwards so the pressure of solid wood behind the half of the bevel uncontrollably rotated the edge, so forcing a wonky cut.

Scribing and Sawing Dovetails

One can come across unspecific arguments about ‘Sawing to remove the line’ or ‘Sawing to split the line’ or ‘Sawing to the side of the line’.

What is best really depends on what tool made the line, and what the line actually indicates.

There are, of course, several ways you can scribe dovetails. Here, I’m using a pencil in the style where you make the pins first. (Using a pencil is more difficult when you make the tails first).

I chose a slightly blunt pencil to show that the width of the pencil line does not unduly matter, just as long as you remember that for a conical marking tool, the important side of the line will lie slightly outside the footprint of the end of the pin.

In this instance, I used the method that uses waste at the ends of the workpieces.

Note: A snag with the pins-first style is that when you saw the sockets, you must work from the inside face of the workpiece. It is really desirable to work so that you are watching the outer face, the face that the world will see. In tails-first mode, although this need not apply work on the show face.

As the pencil finishes its stroke, it flicks away from its guide and leaves a curved end to the mark

To be able to square the line across the end of the job, you need to extend the mark to the very end of the job, ie gently over-mark it.

Strongly resist the temptation to make it bolder and therefore wider.

It is all too easy to strike a line and discover too late that it wasn’t quite where it was intended it to be, so make a tick where you think the line should start, move the square to the side and check whether you have got it right.

Start sawing at the far corner.

Saw at a gnat’s whisker away from the inner edge of the line. The right-hand kerf is just right, the other is a shade to far away from the inside of the pencil line.

Actually, the joint fitted without any tweaking

There are advantages in starting a saw cut at the corner furthest away from you. Some people start on the front corner, but this means that you have to start with the saw exactly aligned so that it matches both the horizontal line and the line on the vertical face. Unless you are in practice it is just too easy to get one of them wrong!

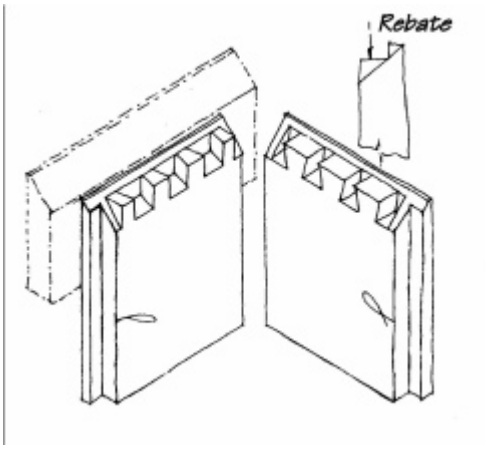
When you work this way, you can get a good start with the kerf firmly established in the waste. As you continue to saw and gradually drop your arm, you first have to watch the horizontal and then the vertical line - not both at the same time

A Secret Mitre Dovetail Joint

To visualise this joint think of it as a common dovetail joint overlaid with a series of thin panels.

- Prepare the material with an extra 0.75mm to 1 mm (1/32in to 3/64in) cleaning up allowance in the thickness.
- Plane the ends dead square.
- Rebate both ends to form the tops of the pins and tails.
- Mark the mitres on the edges. Note the temporary flats deliberately left on the top edges of the mitres.
- Mark the socket depths.
- Mark and saw the pins at 45 deg to the face.
- Finish the tail socket by chopping and paring. Lots of fiddling and faffing in corners. Skew-ended bevelled edge chisels are useful. Since end-grain adhesion is almost non-existent, you can undercut, but don't overdo it.
- Scribe and likewise form the pin sockets on the mating piece.
- Cut all edge mitres.
- Use a guide block with a 45deg face to guide a shoulder plane when forming the long, narrow mitre faces.
- Fully dry assemble to check the fit. Draw arrows on the inside showing which way they should separate. Don't waggle the parts to separate them. Use a hammer on a batten.
- If the joint is too tight, plane a few shavings from the inside face of the pin bearer. If too slack, start again!

- Glue up.
- When cleaning up, plane down to the mitre junction. This way you have prevented damage to the sharp edge of the mitre during benchwork.



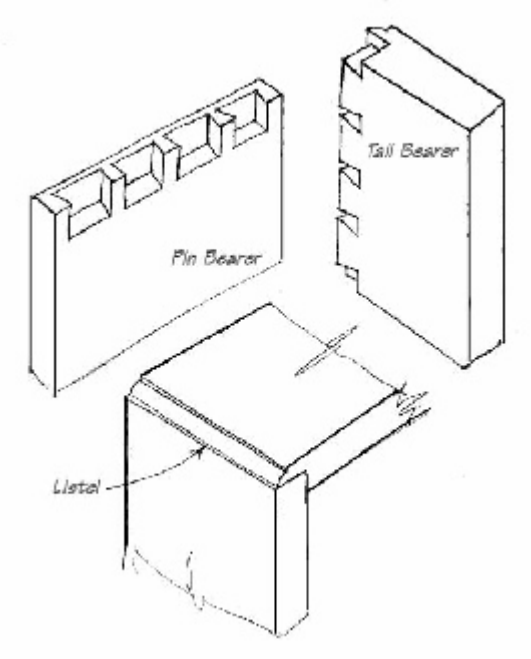
To visualise this joint think of it as a common dovetail joint overlaid with a series of thin panels

Notes: A magnifier can be very useful when marking out the mitres.

Use the end of a combination square to test both vertical faces and the floors of the sockets

A Secret Lap Dovetail Joint

This is not as tricky to make as the secret mitre dovetail. Instead of working the moulding, the end of the top can be finished flush with the side if a plain and simple joint is required.



- Accurately plane all ends. For the time being, assume that the end of the tail bearer will finish flush with the outer face of its mate.
- Mark the socket depths.
- Form the rebate at the end of the tail bearer. Use a shoulder plane.
- Cut the pins. Saw as far as you can at an angle to the face.
- Complete the tail sockets with a bevelled-edge chisel. Skew-ended bevelled edge chisels are useful.
- Since end-grain adhesion is almost non-existent, you can undercut, but don't overdo it.

- Use the end of a combination square to test both vertical faces and the floors of the sockets.
- Scribe, saw and pare the pin sockets.
- Trim the end of the tail bearer to form the listel.
- Work the moulding.
- Dry assemble to test the fit. If the joint is too tight, plane a few shavings from the inside face of the pin bearer. If too slack, start again!

Dovetails For a Hinged Box

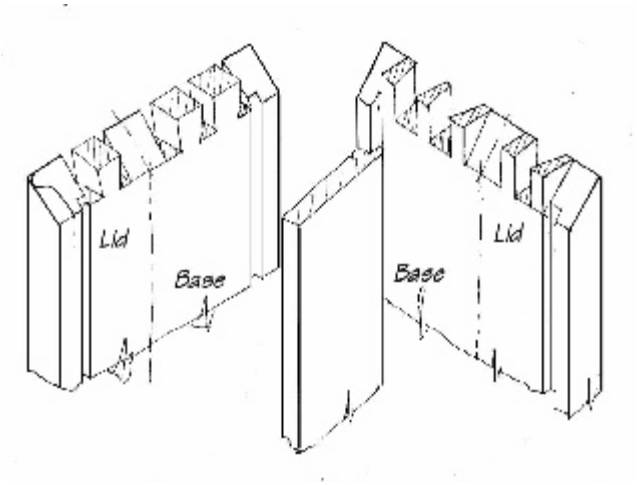
When a lid is formed by first making a box and then sawing around its perimeter, some of us like to show off by having a mitre in the corners.

The edge mitres either return a groove or allow the upper edge to be moulded.

Please note that the surfaces marked with an asterisk are at right-angles to the faces of the sides.

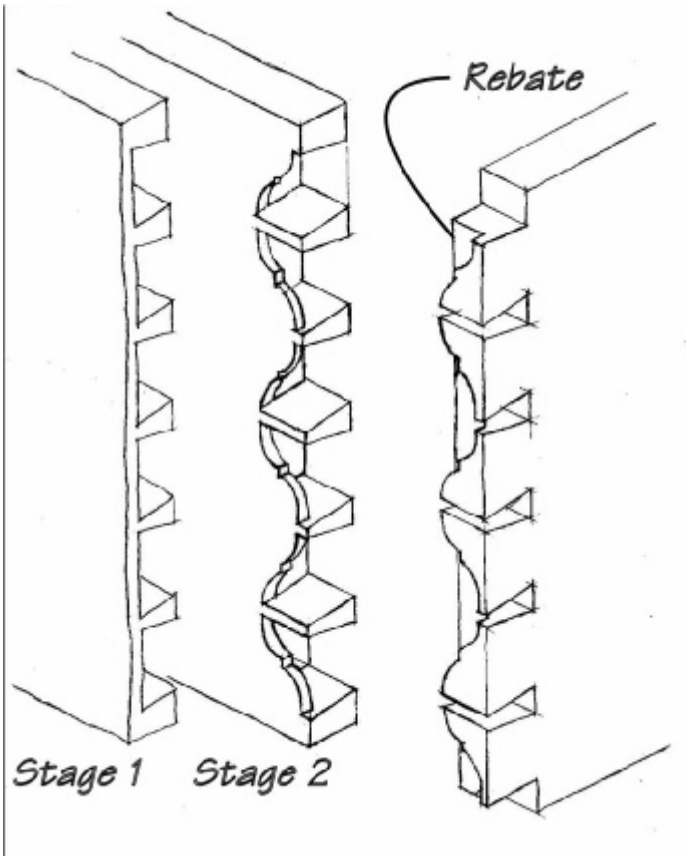
Note the little quirk and bead formed on the bottom. This will inevitably shrink over a period of time, so the quirk helps to improve the appearance of the gap that will be formed. Since wood rarely shrinks in length, you only need to put the quirk on the sides and not on the ends.

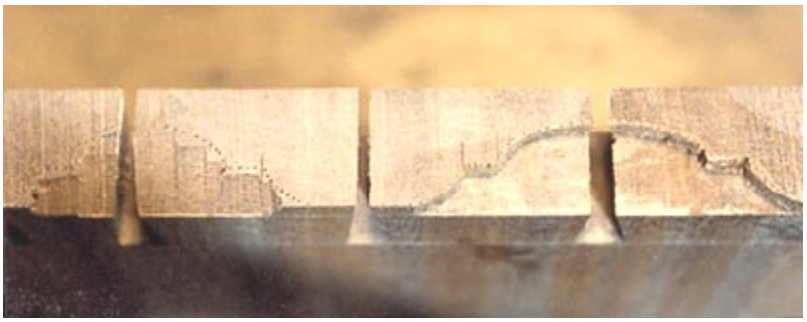
Cut the grooves first. You can then align the flanks of the half pins with the grooves.



Moorish (Bermudan) Dovetails

I got the urge to try one after seeing a photo of a Spanish chest. I've since seen a description of one in Fine Woodworking magazine (Issue 35, August 1982) where they were called (I think) Bermudan Dovetails. The style is said to be of medieval Moorish origin.


Rebate
Stage 1
Stage 2



Prior to shaping, the pin-bearing board looks like a common lap dovetail. The adjacent face looks just like a set of through dovetails. Out of habit, I made the trial joint without waste on the ends of the pins, but with hindsight it would have been better to have had a sixteenth of an inch or so of waste.

Stage 1

It is probably preferable to make the tails first, just as you would do for a common through dovetail joint.

Scribe and saw the pins more or less in the usual way. Note that some cuts should be shorter than others, ie they do not reach the shoulder line of the tail socket floors.

Make the tail sockets just like an ordinary lapped (blind) dovetail.

Stage 2

Prepare a template for the curved shape. It must have a baseline indicating the location of the tail socket floors. Precisely locate the template and scribe the shaped lap from the template. Use a jeweller's saw to rough out the curve. Since using a chisel would be rather tricky, finish with fine files, taking care not to fray the edges. This profile must exactly match the template. If you go a bit too far, alter the template to match your curve.

Stage 3

Offer the pin bearer to the socket bearer in the usual way and cut the sockets.

Note that at this stage the design allows the pins to just enter their sockets. Assemble the joint as well as you presently can.

Using a magnifier, locate the template absolutely dead above the face side of the tail bearer and with a sharp awl prick out the curve.

Stage 4

Pare the end-grain rebates to match the awl marks.

Start with upward sloping chisel cuts working down to the gauge line. Then pare horizontally as near to the awl marks as you dare. Nerves of steel are obligatory. Work to just leave the awl pricks showing

Alternately paring vertically and horizontally, fiddle the profile as best you can with paring gouges and chisels. Check that the rebate floor is at right-angles to the vertical face.

Part of the joint assembled, prior to gluing up.

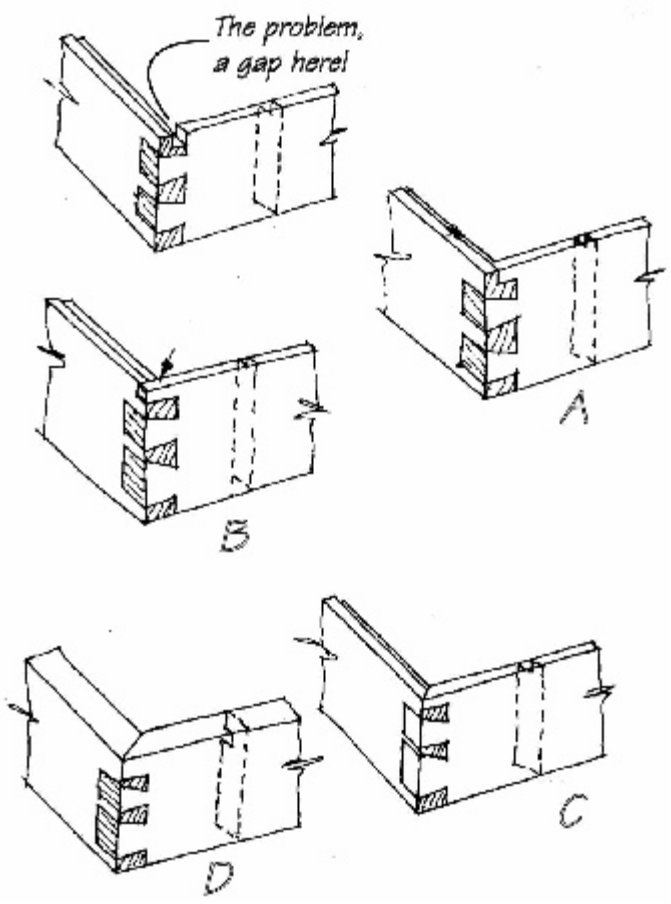
The awl marks (fortunately) swelled tight again after the glue squeeze out was washed from the outside surfaces.

Though it might not look so, the end-grain is slightly lower than the upper surface of the workpiece.

Groovy Dovetails

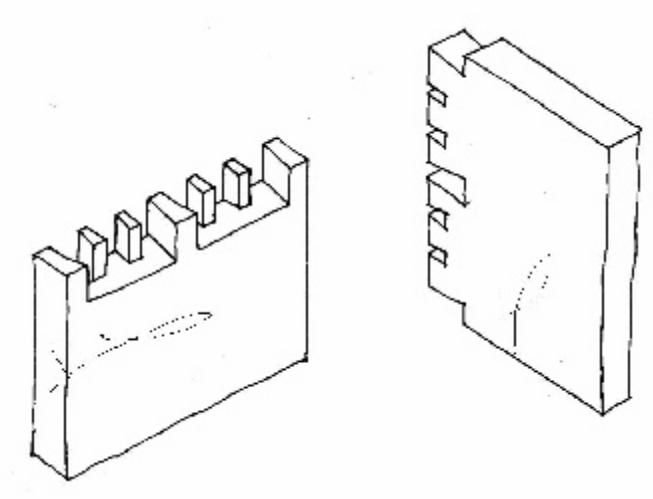
C' illustrates how the mitre 'returns' the rebate.

'D' gives an easy answer to 'how to accommodate a groove'. If mitring is daunting, you could alter the position of the shoulder in the same fashion as at 'A' and 'B'.



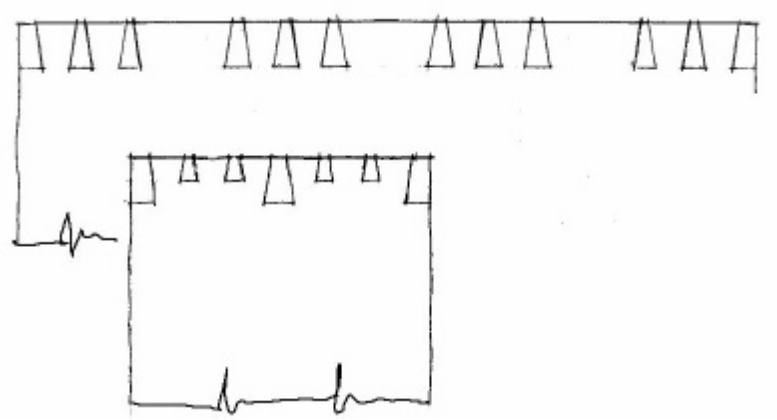
Decorative Dovetails

Small dovetails cut at the customary angle of 1 in 8 tend to appear to have little gripping power, so you might think of making the angles of the smaller pins the 1 in 6 usually used for softwoods. If you make the larger pins 1 in 8, the subtle variation might add a touch of visual refinement to your joints.



Take care not to make them too tight since I have known them to be extracted by their roots when trial joints are pulled apart.

The upper joint has structural value since the extra grip at the sides could help to restrain a board that might cup, though this might really be a bit of an academic point.



Because the half-pins only receive pressure on one flank, they can easily be bent sideways and possibly will split. Make them a bit more robust than the intermediate pins.

Anyway, they look pleasing to some people and can add a distinctive touch to your work - English Arts & Crafts designers used them.