

Fitting hinges

Don't skimp on hinges, says John Lloyd, and take your time fitting them properly

Know it's difficult to focus on such trivial things as hinges when deeply embroiled in the process of conceiving the next 'furniture sensation'. If there's a door or a lid involved in a design, surely it's safe just to assume that a hinge of some sort will be involved eventually in the making process. So why ignore any vague ideas of finding a catalogue to see what might work, look good and perhaps even enhance the design?



Caring Show that you care by lining up the slotted screws on your hinges. Someone will notice, and so will you! John chops out a hinge recess (or mortice) by hand

ruined by handles that have seemingly been bought in haste as an act of desperation when a delivery deadline is looming perilously close. Hinges aren't quite as obvious a design statement as handles, but nevertheless a bit of thought about size and design can help enormously, in fact it is often desirable for hinges to be as discreet as possible whilst, and this is very important, allowing

“The drawers behind the doors couldn't actually open”

furniture at the final hurdle having spent many hours and shed much sweat, many tears (but hopefully not too much blood), executing the woodwork!

So choosing the right ironmongery is actually an important part of any design process. I've seen many fine looking pieces of furniture

the hinged component to open in the way that the design of the furniture requires. Many years ago I managed to choose and fit hinges to a serpentine door in such a way that the drawers behind the doors couldn't actually open – I'm not making that mistake again!

Having taken note of the opening rant, and given the



subject of hinges some consideration don't make the mistake of thinking that hinge procurement could be an opportunity to make some useful, profit-enhancing, savings. Don't buy cheap hinges!

Even if hinges were hand made and gold plated by hobbits, they would be unlikely to represent a huge part of the materials budget for any reasonable-sized furniture making project; and at least if the hinges were considered at the design/pricing stage, the cost of hinges could actually be included with all the other materials. Cheap hinges will usually be 'Pressed', meaning that they have been stamped out of a sheet of metal and folded/pressed into a shape that vaguely resembles a hinge. The

part that does the 'hinging' on this sort of hinge, ie. the knuckle and pin, is formed by just wrapping the edges of the leaves around a pin and the leaves might be folded along their length to double their thickness.

Hinge design

Pressed hinges are unlikely to be accurately made, might not be square or flat, the pin is likely to have some play in it and the screw holes are unlikely to be accurately drilled. All of which will make them difficult to fit accurately, and they are unlikely to have a smooth action and consequently will not look great. 'Extruded' or 'Solid Drawn' hinges are in a different league or and if you're determined to use the Rolls Royce of hinges,

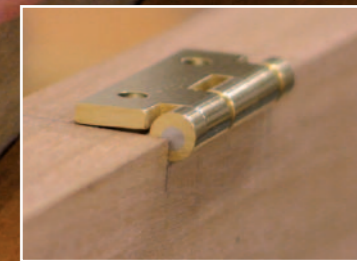
have a look at Brusso; not cheap, but beautifully made and available in brass or stainless steel, with stainless pivot pins.

There are of course many different types of hinge, some with very specific uses, for example 'card-table' and 'rule-joint' or 'table' hinges, but the most commonly used is the 'butt' hinge and this is the hinge that I am going to concentrate on. Butt hinges have a very simple action and should be pretty simple to fit, but it is important to understand how this, or in fact any, hinge works; the most important consideration being the position of the 'pivot point'.

If you ever see a carpenter fitting a butt hinge to a house door you will probably notice him lay the open hinge over the edge of the door and mark around it with a knife or pencil. This is a quick and easy way of marking out, and ensures that the hinge will work without any problem, but the knuckle of the hinge will be protruding a great deal further than it needs to. It's not a problem perhaps on a sitting-room door, but not as discreet as might be desired on a bespoke cabinet.

Pivoting hinges

The pivot point is situated at the centre of the hinge pin and to understand the influence of the position of this point I'm going to ask you to do a little 'homework'. This little exercise could be the big hinge breakthrough that you have unknowingly been looking for,

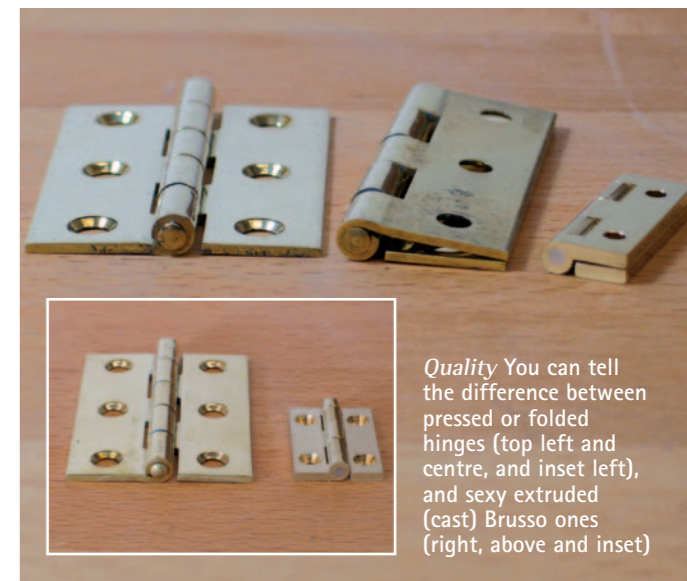


Positioning The chippy's approach to lining up a hinge (main pic) and the optimum position to prevent binding (inset)



TIP Softer A chamfer filed on the end of a butt hinge softens the knuckle, as suggested by one of John's students, Ian Parker

and is actually to be found in Joyce's furniture making bible, if you know where to look and can understand the black and white drawing! For this exercise you will need a piece of plain paper, some tracing paper, a ruler, a pen and a pin. On the piece of plain paper, in plan view, draw the front corner of what might be the side of a cabinet, full-size; on the tracing paper draw the end of a door, also plan view and full-size; now place the tracing paper representation of the door onto the plain paper in such a way



Quality You can tell the difference between pressed or folded hinges (top left and centre, and inset left), and sexy extruded (cast) Brusso ones (right, above and inset)

that the 'door' is sitting against the 'cabinet side', with the door in the 'closed' position. Imagine that the hinge is located on the front corner of the 'door' with the knuckle of the hinge protruding completely from the front of the door, in the way that a carpenter might fit a hinge. Now place the pin on the tracing paper at the centre of

the knuckle, ie. at the 'pivot point'. The 'door' can now be opened by rotating the tracing paper, with the pin acting as the pivot. As the door opens you will see that the 'door' immediately starts to move away from the side of the cabinet, which can be seen through the tracing paper. Now close the 'door' and move the pin so that

TIP



Returned Make sure you mark hinges and mortices so that you return the hinge to the right mortice for accuracy. This is particularly important with cheap hinges

the 'pivot point' is exactly in line with the front of the door and the cabinet's front edge. Open the door again and you will see that the front corner of the door stays very close to the corner of the cabinet. Finally, move the pin 'pivot point' so

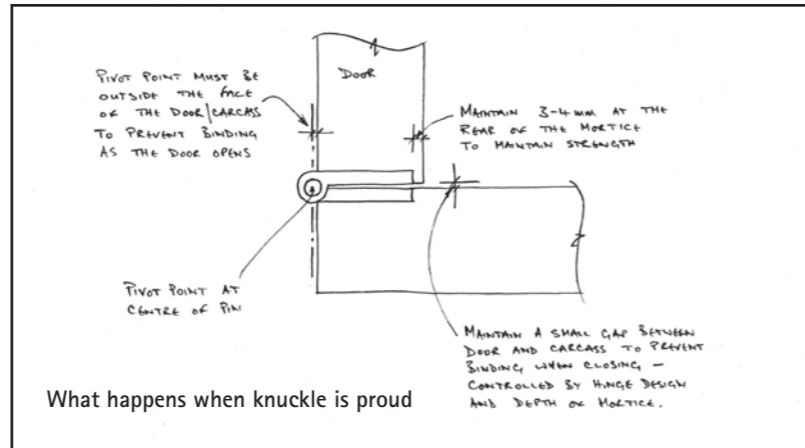
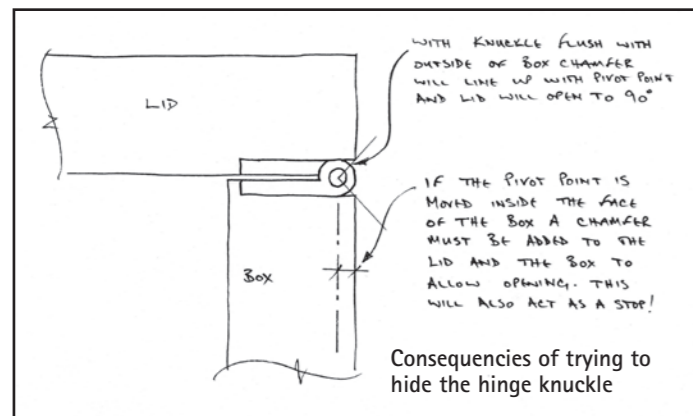
with the reality of working with a material that changes size on a whim, so in fact the optimum position for the pivot point is just outside the face of the door. The 'tracing paper' technique is one that I have used time and again and follows

"I often say: 'If you can't work it out, then draw it out full size,'"

that it is a few millimetres behind the front face of the door/cabinet, and again 'open' the door. This time the corner of the 'door' will make contact with the 'cabinet' when it has opened a little way.

So now you know that the optimum pivot point is the second option, with the pivot point exactly in line with the front edge of the door and the side of the cabinet. Well that's the theory, but we need to deal

my mantra when designing furniture and laying out joints, 'if you can't work it out, draw it full-size'. It's not a very catchy mantra, I know, but it usually enables my sometimes rather addled woodworker's brain to work out what's going on, or what's required to make something work! The photos (below) show the tracing paper technique being used to enable me to work out the best shape, and position, of the cranked



knife hinges that were to be fitted to a cabinet I made recently with serpentine doors. It was vital to get this right so that I could establish whether the internal drawers would clear the doors when opened to only 90°, because, as I said earlier, I wasn't going to make that mistake again!

So understanding the pivot point when positioning the knuckle of the hinge is crucial, but understanding how deep to mortice the hinge leaf is also vital, not this time from the point of allowing a door to open; now it's to ensure that the door will close without trying to rip the hinge screws out! This also relates to the 'pivot-point', and for a normal situation, where both halves of the hinge leaves are morticed to the same depth, it is just a question of keeping the pivot-point a little above the surface of wood, not buried in



the mortice. If you get this wrong the door will spring open when it has been closed, but this can be rectified with a little packing in the mortice under the hinge leaf.

Another little gem from Mr Joyce is that 'empty cigarette cartons are useful for shimming up hinges'. I'm not sure taking up smoking should be seen a vital part of being a furniture maker; after all a piece of veneer would also work!



Trick The tracing paper trick from Joyce, with the door closed (left) and open (right). In this case we're testing if the door will open without binding on the carcass, and the drawers won't hit the door

Fundamentals Fact File No.3 Fitting Butt Hinges

The 14 Step Guide to fitting a butt hinge neatly and without any fuss

As with many aspects of furniture making, precision, careful marking-out and sharp tools are some of the vital ingredients to successfully fitting hinges. Firstly, though, a decision must be made as to where the hinges are to be placed on a door or the lid of a box and then what size the hinges should be.



Tidy The completed hinge, with the leaf level to the top and pivot point central

The position of a hinge along an edge doesn't have any rules that I'm aware of, although there seems to be a consensus that they should be a minimum of the length of the hinge from the ends of a stile. Ultimately, though, it's what looks pleasing to the eye. As far as size goes, the hinge should certainly look man enough to do job that it is being asked to perform, and the width of the leaf, when fitted, should either leave a minimum of a 3-4mm strip of wood at the back of the mortice or end up exactly the

same width as the edge it is being fitted to!

Before starting to fit a hinge, give it the once-over to make sure it's square and has nice crisp edges, and tidy up as necessary with a file or some wet & dry abrasive paper on a piece of glass.

Sit the hinge in place and mark its length, using a knife, making small nicks on the corner of the stile, then square a pencil line across the edge of the stile from the nicks. For precise hinge fitting, a cutting gauge should be used to mark



Pic. 1 Mark the length of the hinge making a small nick at each end with a knife



Pic.2 Extend the knife marks with a pencil and square on the face (above) and edge (Pic.3 below) of the workpiece



Pic.4 Set the cutting gauge to a little less than the distance from the edge of the leaf to the centre of the pin

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out the width and depth of the mortice required for the hinge. Two cutting gauges can be useful here so that the same settings can be retained for all the hinges being fitted without having to repeatedly re-set the gauge, which can introduce errors. Set a cutting gauge to the width from the edge of the leaf to not quite the centre of the pin (remember the tracing paper homework!) and gauge the width of the mortice between the pencil lines; repeat this process of pencil line and gauge line for the depth of the mortice, setting the gauge to the thickness of the hinge leaf, or not more than the distance from the face of the leaf to the centre of the hinge pin.

Paring the recess

The knife marks on the edge of the stile can now be extended across to the gauge lines using a knife and a square. Chopping the mortice by hand is far more satisfying and rather more peaceful than using a router, although I might indulge in a little freehand routing, using a small straight cutter, to remove the bulk of the waste if I had a lot of hinges to fit. Use a chisel

of about the width of the mortice to chop down into the edge of the stile, keeping clear of the scribe and gauge lines, and remove the bulk of the waste by paring across the mortice with a wide chisel.

If you're of a nervous disposition, it is a good plan to give the narrow strip of wood at the back of the mortice some support with a piece of mdf and a couple of cramps while paring, to help prevent this fragile back edge from breaking away. Creep up on the lines by chopping and paring until there is only a very small amount of wood remaining, and finally go for the lines. Using a wide chisel for these cuts to the back and depth of

the mortice will help to achieve a nice crisp result, and leaving only the smallest amount of waste to remove with these final cuts will help with the accuracy of the mortice; leaving too much waste will result in the bevel pushing the chisel beyond the scribe lines and create a baggy mortice.

Tapered leaves

Watch out for tapered hinge leaves and taper the bottom of the mortice slightly up-hill to match the leaves, if you want to end up with the leaves flush with the surface of the stiles. Ensure that the screws that are to be used don't sit proud of the leaves when fitted as they can hit each other before the

hinge is completely closed; mark screw positions with a spike, slightly off-centre towards the back of the mortice, to ensure that the screws, when fitted, will push the hinge snugly into the back of the mortice; drill pilot holes for the screws and run in a steel screw before finally fitting brass screws, if brass screws are your thing!

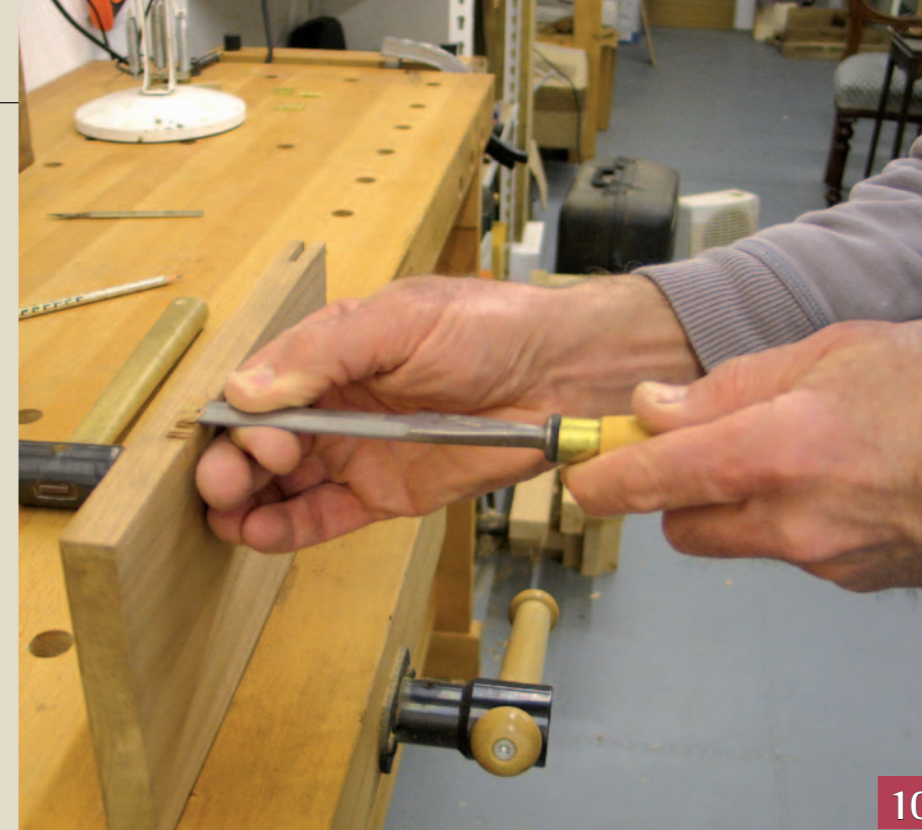
I prefer the contrast of steel slotted screws against the brass hinges. Rub a little candle wax on the threads of the screws before fitting them and line up the slots in the heads of the screws. I know it might seem a bit sad to indulge in the 'lining up of screw heads' thing, but it shows you care!



Pic.6 Set the gauge to the thickness of the leaf, or a little less than the face of the leaf to the pin centre



Pic.7 Gauge the depth of the hinge mortice on the face of the rail/stile



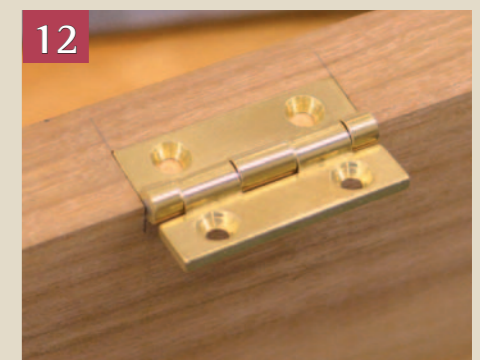
Pic.10 Pare out the waste from the mortice with a wide chisel. You may want to clamp a piece of scrap to the back of the board so that you don't accidentally break through the narrow piece of wood at the back of the recess



Pic.8 Chop down into the mortice to define the edges of the recess



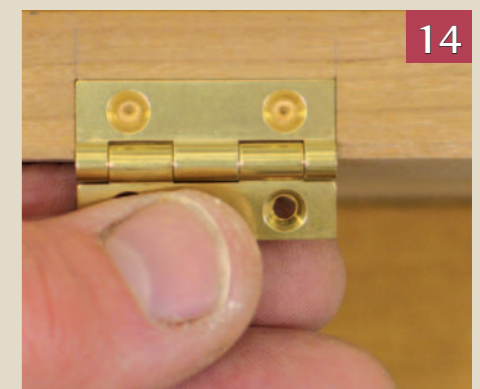
Pic.11 Make final cuts to the gauge line



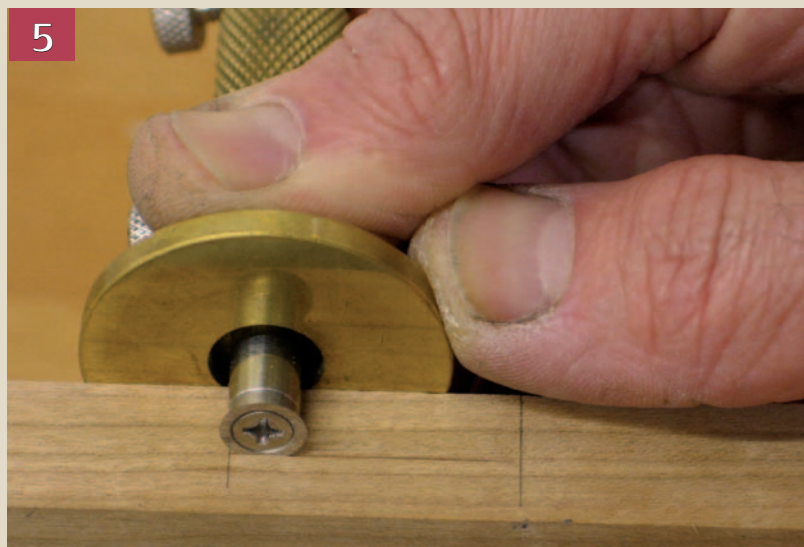
Pic.12 Test fit the hinge in the recess



Pic.13 Mark the screw position with a spike



Pic.14 Mark the holes slightly off centre



Pic.5 Gauge the line between the pencil marks with the cutting gauge



Pic.9 (below) Chop into the hinge recess to remove the waste