Wooden Panel Raising Plane

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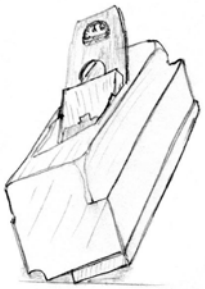
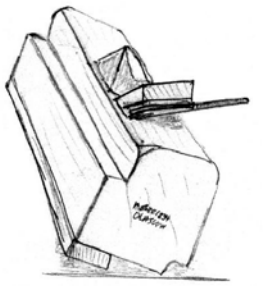


When I first saw it in a second-hand shop, I thought it was a type of rebate plane. It was dirty, rusty and missing the wedge that holds the blade. Only once I tried it out, did I realize that it was a rather poor rebate plane. After some investigation, I discovered that it was a panel raising plane, intended for making fielded panels. What made it interesting, was that the blade is skewed, which helps the plane to deal with difficult grain. The angle of the skew is such that it also tends to pull the body into the fence, which reduces effort for the user to keep that plane straight. The sketches show front and back views of the plane.



First step was to remove the blade, which proved to be a problem – it was loose, but there just insufficient clearance to pull it out. It seems that as the plane aged, the body shrank slightly. The iron obviously did not. After some wiggling and pulling, the iron eventually came free. A light touch with a file to the sides of the recess, made enough clearance for a snug fit. The iron was rusty, but not where it really mattered. It is a typical tapered iron, forged of two types of metal – high carbon "warranted cast steel" for the thick cutting edge and a low carbon steel for rest of the blade. You can see the customary semicircular forged motif at the top that said

THOS IBBOTSON & CO
WARRANTED
CAST STEEL

This seems typical of the Sheffield area. The motif in the centre looks like two cherries, but your guess is as good as mine. The chip breaker was stamped with

MATHIESON GLASGOW.

The body of the plane was also stamped with

MATHIESON GLASGOW.

Another name, presumably that of one of the owners

Ja Fraser,

was stamped onto both ends as well.

The blade and cap iron were de-rusted using electrolysis, which is best for conserving old pieces, as it only removes rust, no metal. Then the back of the blade was flattened again to remove any pitting marks close to the cutting edge. The cutting edge was reground to remove rust pits and then honed to pass the "hairy arm' test (able to shave off a few hairs). Despite the crude appearance of the blade – it was obviously hand forged and ground, it sharpened up to a keen edge.

The fence was removed and the screws de-rusted. The body and fence were cleaned with a light rubbing with wire-wool.

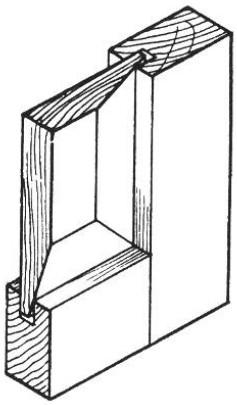
The next task was to make a new wedge. This wasn't easy, as there was no part to copy, so the new one had to be laboriously fitted into the body. Due to the skewed blade design, there were no right angles either. I looked at the wedge design of a wooden jack plane that I had and copied that. The existing parts were made from beech, so I also used beech. It doesn't match the colour of the old parts, but it is a new part. Maybe in 50 years time it will. The picture on the right shows the replacement wedge.

Once the wedge was complete, I refitted the blade, with cap iron into the recess, and tapped in the wedge to stress the body, before checking the flatness of the

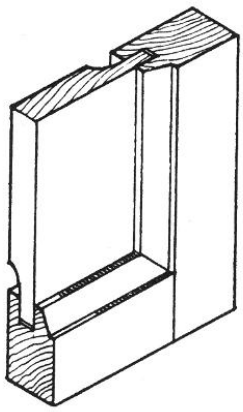
sole. (This is important – the body can flex when the iron and wedge are fitted and tightened up.) There was small dip in the middle, around the mouth, which was enough to affect the functioning of the plane. The plane would only cut at the start and end of a work piece.
Warping of the sole is quite common with wooden planes, particularly as the body ages. I used 150 grit cabinet-paper laid on a true flat surface to flatten the sole. Stopping frequently to check progress with a straight edge, this took about ten minutes. I estimate that only 0.5mm was removed at the one side of the heel, but it was enough to restore operation. It was now possible to take a full shaving from a flat work piece. The picture of the sole shows the iron fitted and the fence, adjusted over to the left. You can see that the lower left corner of the sole in the picture – the heel, has been sanded down.

When taking a trial cut, the shaving was not uniform across the width, and with the limited range of adjustment, due to the tight mouth, the blade had to be reground to remove about 0.5 mm from the left hand side. This error may have been introduced when I reground the blade the first time, to remove the rust pitting. After regrinding and honing, a shaving could be taken across the whole width of the sole. It is worth noting that, by design, the plane would probably be set to take a deeper cut on the left-hand side close to the fence. This due to the fact the rebate that is planed for a fielded panel would typically slope towards the edge. So by setting the iron take a shaving that is twice the thickness on the fence side, time would be saved.

This particular plane had no nicker iron, as some do. This is useful for cross grain work, to reduce tear-out. In practice, when marking out the fielding, a line could be struck using a marking knife, and this would serve to prevent tearout. There was also no depth stop, but this could then done by eye by the workman. A normal rebate plane could be used to cut fielding, but where this plane improves on a rebate plane, is that it doesn't have a sharp 90° edge on the right. So it will cut a sloping edge, which is what is wanted, being more pleasing to the eye. The skewed iron reduces tear-out in cross grain work – two of the four cuts on a panel are cross grain. The range of adjustment of the fence is limited to that required for fielding. This plane had been used, but only lightly, as there was little wear around the mouth – slight chipping, and the gap in the mouth was small, important for reducing tear-out in cross grain work. The quality of the sharpening done before was high, using a fine stone, with very little scratching that characterizes hand sharpening on a coarse stone.



So what is a fielded panel? In medieval times, much furniture was made from solid boards, which created a problem for any sort of six sided box as inevitably two panels would have different grain orientations, with differing rates of expansion. Cupboard doors would stick and sides would split with the changing seasons. The innovation that cured this was the frame and panel method of construction, still used today. The frame consisted of two rails (the vertical parts) and two styles (the horizontal parts), joined together using mortises and tenons in better work. The inside edges of the frame had a groove cut, using a fillister plane, and a panel was located in the groove, thereby filling in the middle. The diagrams show a section with a rail, a style and part of a panel. The diagram on the left shows a simple bevel. A more complex bevel with a compound profile, such as this plane can make, is shown in the diagram on the right. The panel is made a slightly loose fit widthwise, across the grain, to account for expansion and contraction differences between the panel and the frame. Usually, the panel would be a similar thickness to the frame. So to fit into the groove, it would be thinned down around the edges. This thinning is called fielding, and fielding plane like the one above would be used for this.



Nowadays, one would use a router or a shaper (spindle molder) to put a profile on the edge of a panel. A table saw can also be used with jig to hold the panel.

Derusting

The setup shown in the diagram was used for de-rusting the metal parts of the plane:

The benefit of electolysis over other derusting methods is it removes only the rust and no sound iron. This is particularly important for valuable antiques, as the minimum harm is done. This is better than more aggressive methods of rust removable such as chemical removers, such as phosphoric acid, or wire wheels, sandblasting and sandpaper which can damage a piece further. The container must be non-conductive, so it is not involved in the process. The solution before and after is harmless, so safe disposal is not a problem. When derusting more exotic steels, such as those containing vanadium, I would be more cautious with the solution, as several constituents in high performance steels are known to be toxic.