Making Beetle and Poker Hands

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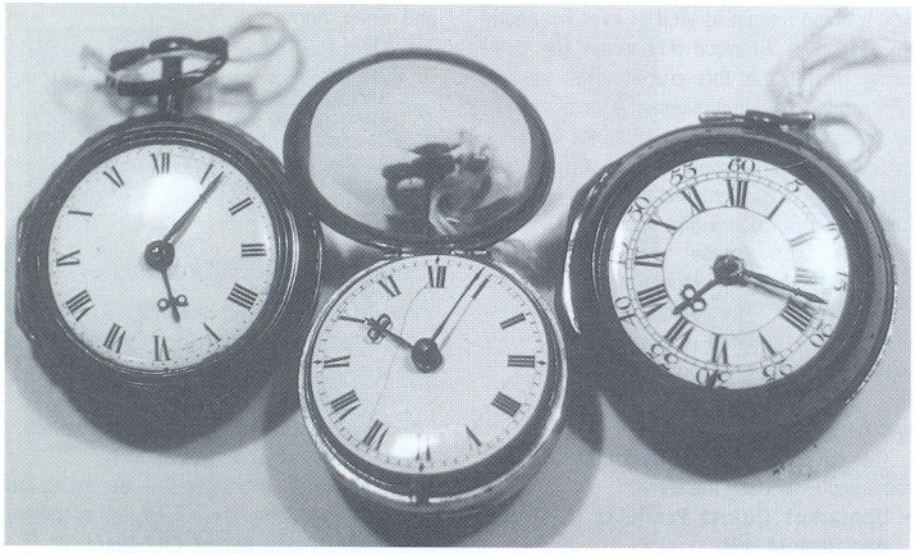


The watches, complete with hands.

Introduction

THOMAS HATTON, a London watch maker, had this to say in 1773[1]:

> "It is with reluctance I enter upon the extravagant expence, foolish notions, and prevailing fancies of many, upon the form and construction of their respective choice of hands. I say, it is with reluctance, as seemingly to speak against, or depreciate, one of the greatest and most curious workmen in the world, in this branch. But as hands are only to shew the time, what occasion is there for pieces of use only, to go to the expence of sixteen shillings or a guinea, when a neat pair for six-pence will do the same business, and better than the former?"

It is a debatable point. Hands are the most visible, and most frequently observed part of a watch, and while overly elaborate designs can detract from their primary function, they need to be well made, well finished and in sympathy with the watch and its dial.

Anyone who has had any dealings with eighteenth century watches is likely to have come across watches with missing or broken hands, and they would most likely have been of the type known as Beetle and Poker.

Some were cast, perhaps some were filed from sheet, but most were turned from the solid and then ground flat, giving a pleasing sculptural appearance. The only reproductions I have seen are stamped from sheet metal, and would need a lot of filing to reproduce the three dimensional effect.

Having recently acquired three similar watches needing new hands, I decided to have a go at making them in the traditional manner. Initially it looked difficult, but in fact anyone with patience and some experience of turning can make these classic hands.

Material

Originally hands were made of steel, gold or brass. The three watches I was working on all had remnants of steel hands so the choice was already made. Silver steel turned in the annealed state was the obvious choice of material, although I made one of the minute hands in blue pivot steel as an experiment. I marginally preferred the blue steel to work with but there was little difference in the end result and I had plenty of silver steel to hand in the right sizes. The minute hand needs approximately 3.0mm material, while the hour hand is in the region of 4.5mm at its widest.

Style

The basic pattern of the beetle and poker is fairly standard, but there are many minor variations from the elegance of Harrison's H4 to the rustic crudity found on many cheaper watches.

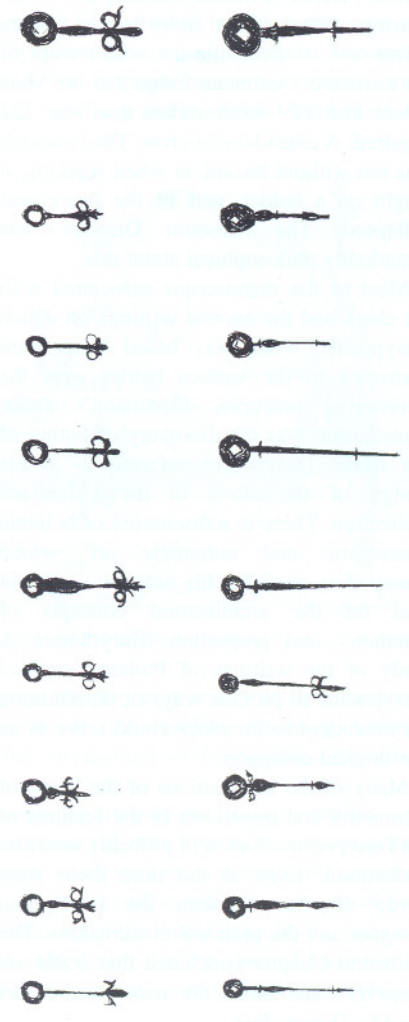
I did not work to a detailed plan, but studied a range of different hands[2], then worked by eye, only taking measurements for lengths.

Making the poker

The minute hand is relatively straightforward to turn. The traditional makers would have turned between centres which would be difficult to achieve with the steel in its annealed state, as there is little strength to resist the pressure of the graver. You would need to harden and temper blue before turning.

I mounted the material in a split collet without heat treatment. It is necessary to turn from the end in towards the headstock, finishing each portion before moving on. If you try to turn it all the way down, then go back to do a bit more to the end, the fine stem is almost certain to break. Only two measurements are needed: from the edge of the chapter ring to the base of the numerals and from the edge of the chapter ring to the centre boss.

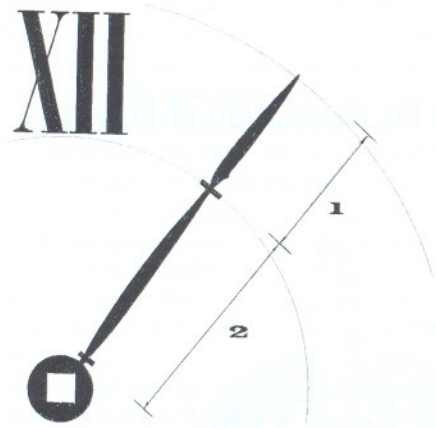
Turn a spindle shape, roughly the length of



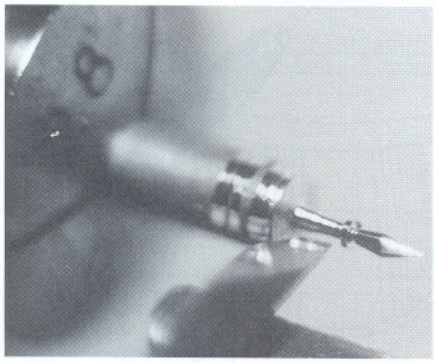
Sketch of a selection of hands (easier to make than draw).

1. Quoted from Leonard Weiss *Watch-making in England 1760-1820.* HALE 1982 ISBN 0 7091 9725 X.

2. Some hands were drawn from Robert Kemp *The Englishman's Watch.* SHERRATT ISBN 0 85427 052 3.



Measuring the minute hand.



Turning with the chisel-ended graver.

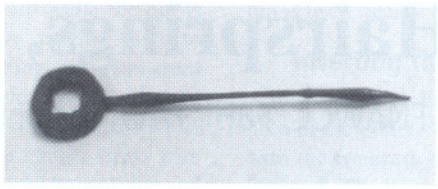
the numerals. Finish smooth, then turn the little collar at the base of the tip. A chisel-ended graver is useful for the back of the collar.

The main stem is also a spindle shape, and there may be another collar near the base. Turn the stem a short length at a time, finishing as you go. The boss is turned as a sphere. A special tool could be made for the purpose, but it is not really necessary. Finish the sphere as far as possible before parting off.

Now all that is needed is to grind it flat. I tried several ways of doing this. The method I preferred was to mount the boss of the hand with shellac in a wax chuck in the lathe. Use a female tail stock runner to centre it before the shellac cools. The centre can then be turned flat and drilled from the tail stock in the same set up. Don't touch the rest of the hand.

Remove from the lathe and cement the flattened side of the hand to a piece of wood using shellac again. File the whole of the exposed side perfectly flat — this will be the underside. Remove from the board. Place the boss of the hand over a hole on a steel stake, and use a square drift to punch out the centre hole to the correct size. Finish the hole with a file if necessary.

That's it, really. Polish the top surface (it won't need much if the graver was properly sharpened and polished), harden and temper if necessary — coarser hands are robust enough without heat treatment. Bring it to a nice blue and fit it to the watch.



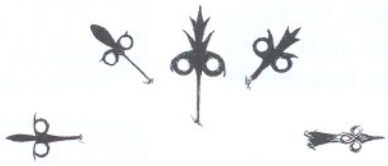
The finished Poker.

It all sounds simple enough, but it does take a while to do. Most of the original metal will be removed by the time the hand is finished, and it must be done with care.

Making the Beetle

The hour hand is altogether a more complicated thing. The pointer on the end is turned first. It can be a simple spearhead or divided into 3, or even 5 points.

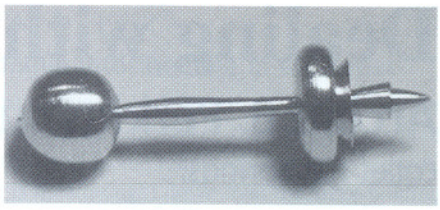
The bulbous portion is simple enough, but



Tips of beetle hands.

the points at the outer end can be tricky. A long pointed lozenge graver is used and the groove must be cut rather deep to make the points stand out clearly. The inner side of the bulbous part needs to be undercut to lighten the final appearance. A chisel-ended graver is useful to cut this corner. Work down the stem and the boss as before.

You will have a dumb-bell shape that must be flattened at both ends. Again there are several possible techniques. I drilled two holes in the board to take the dumbbell shape, and cemented it in with shellac. Filing needs to be done slowly as it can generate enough heat to melt the shellac. The end you are working on then detaches itself, with disastrous results. (Believe me!) File this side completely flat — it will be the underside. Remove it from the board and turn it over. Make a suitable depression in the wood, fix the hand again and file the bulbous portions only. Mark the centres of the three holes, and drill them while it is still attached to the board. Finish and polish the hand before heat treatment.



The turned hour hand.

A suitable alternative for the last filing operation is to use SUPERGLUE® to fix the flat surface to a piece of brass. The glue is softened in hot water to remove it afterwards. One way to centre the holes accurately for drilling would be to glue the hand to a flat piece of brass and mount this in a faceplate. Each hole could be centred in turn.

The end result

I was pleased with the final appearance of the watches. All three are in need of a lot more work on the cases and movements, but at least they are fully handed. Whether the time spent was really justified is another question — I'm not planning to go into commercial production! □