# Over-Coil Forming Tool

## An alternative to tweezers

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My first pocket watch was started, as many others have, with the aid of *'Watchmaking'* by George Daniels. In the beginning the detailed instructions for the manufacture of small parts were followed to the letter. As the work progressed and experience was gained it was natural to start applying my engineering skills gained from a tool-making apprenticeship that covered precision gauges, production jigs and fixtures, etc.

Over time many small tools and cutters have been made to improve the quality of the work. For example square holes are now made using multi-toothed cutting broaches as opposed to the simpler 'punch' approach outlined in *'Watchmaking'*. This overcoil press is just the latest addition to several drawers full of such useful items that have been created over the years and I thought that a description may be useful to others.

The balance on the watches that I make is free sprung with a terminal curve to adjust for isochronism. While the balance spring on the first pocket watch was successfully 'pulled-up' using standard tweezers as outlined in *'Watchmaking'* it did take a few attempts to get it right and much practice is required to become consistent.

With an eye to future projects the opportunity was taken to look at different methods of forming the overcoil for the second pocket watch. While standard tweezers can be modified to do the job, for example the approach outlined in *'Practical Watch Repairing'* by Donald de Carle, these still rely on a degree of judgement to determine when the bend is correct. The alternative is to buy tweezers specially made for the work; these have the advantage of an adjustable stop to set the amount of bend. However these items are quite pricey and as they come in different sizes (bend radius) more than one pair may be required.

The commercially available tools are in effect a simple press which has a round male former that clamps the spring in place before it is pushed into a matching half-round groove. The adjustable stop then sets the amount or degree of bend. This principle has been adapted, **Figure 1**, so that the anvils that determine the radius of the bend can be easily replaced with different sizes.

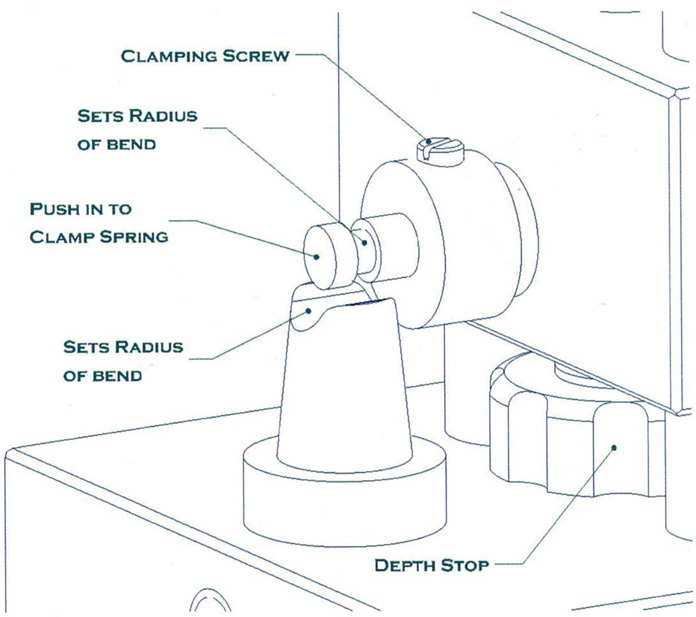


Figure 1. An adaptation of commercially available tools.

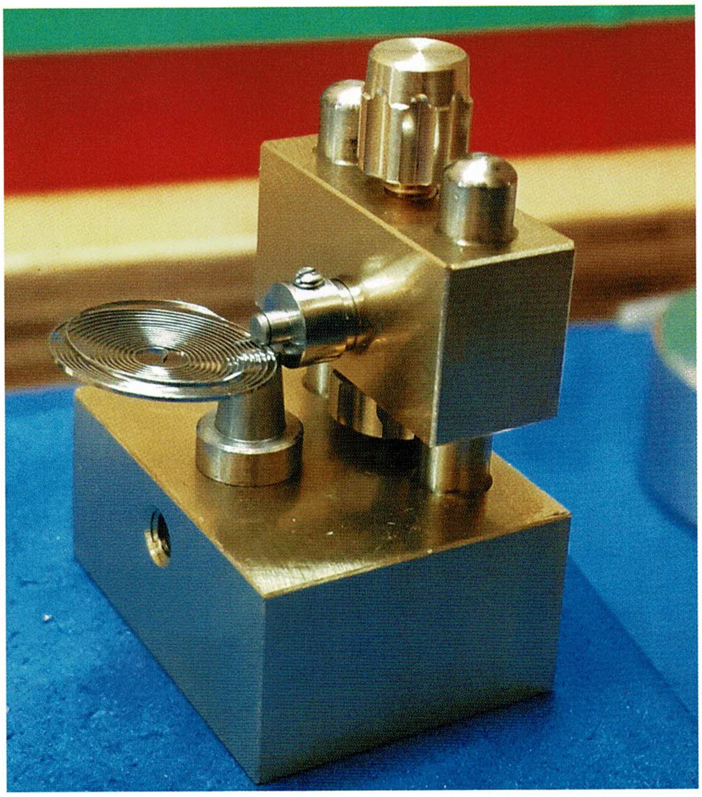

Figure 2. A robust approach was taken with the construction to ensure consistent alignment.

Rather than base the tool on tweezers a more robust approach was taken with the construction to ensure consistent alignment, **Figure 2**.

The main structural parts are made from brass, the sliding pillars are 4mm diameter silver steel and the anvils are also made from silver steel.

In use the outer coil of the spring is lightly clamped in the male former and the clamping screw tightened (**Figure 1**). Once the depth stop has been adjusted it is just a matter of pressing the two halves of the tool together to form the first bend. The spring is then turned over and re-clamped a suitable distance from the first bend to produce the equal and opposite other half of the elbow. The end result is shown in **Figure 3**.

**@djcottrellwatches**

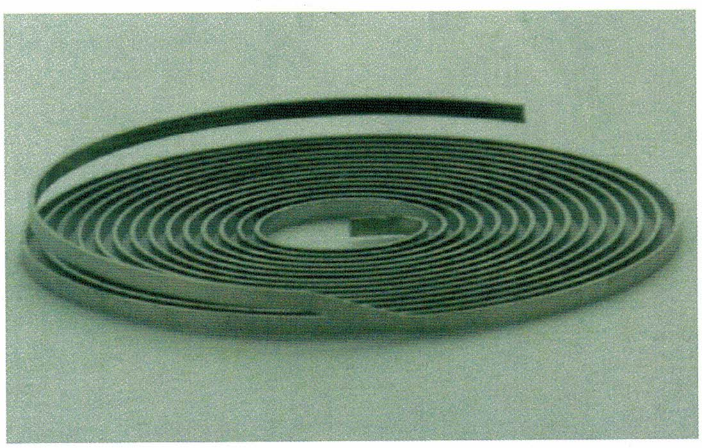

Figure 3. The end result.