

Fabricating a New Bird Perch When Installing a New Movement In a Cuckoo Clock

by

Lloyd Lehn PhD CC
www.cuckooclockhospital.com
lloyd.lehn@verizon.net
703-256-2684

Background:

Within the past several months there was a message on one of the clock groups asking about installing a new perch for the bird when one replaces the movement in a cuckoo clock.

At the time, I typed up an answer for the instant problem and it apparently went away. However, I felt that could have done a better job at the time and have thought about it once in while since then.

I've replaced a number of cuckoo movements since then but they were simply putting in same movement. That is easy since one transfers the perch, the gong hammer and other parts from the old to the new unit with minimum difficulty.

Last week, a customer brought in a clock and after determining a new movement was the best solution, I realized I had found a more complex example to show how to put in a new perch.

Purpose:

Thus the purpose of this paper is to provide some insight on how to efficiently fabricate a new bird perch for a cuckoo clock when replacing the movement.

Assumptions:

This is not meant to be fancy academia paper but simply a quick and dirty means to pass along some of my knowledge/skills on this subject.

The readers are experienced clock repair people and I need not explain some of the basics of clock repair or cuckoo clocks.

I may use pictures of other movements to illustrate a point since I don't feel like taking apart a customer's clock over and over.

If there are any errors in the paper, I am responsible. If the reader tries to use my techniques, he is responsible for the results.

Before I get into the perch problem, I want to point out that I used some heavy duty tools that are not normally thought of as being used on cuckoo clocks.



The wire used for perches is much heavier than other cuckoo wires so I used the tools you see to the left to bend and cut the wire.

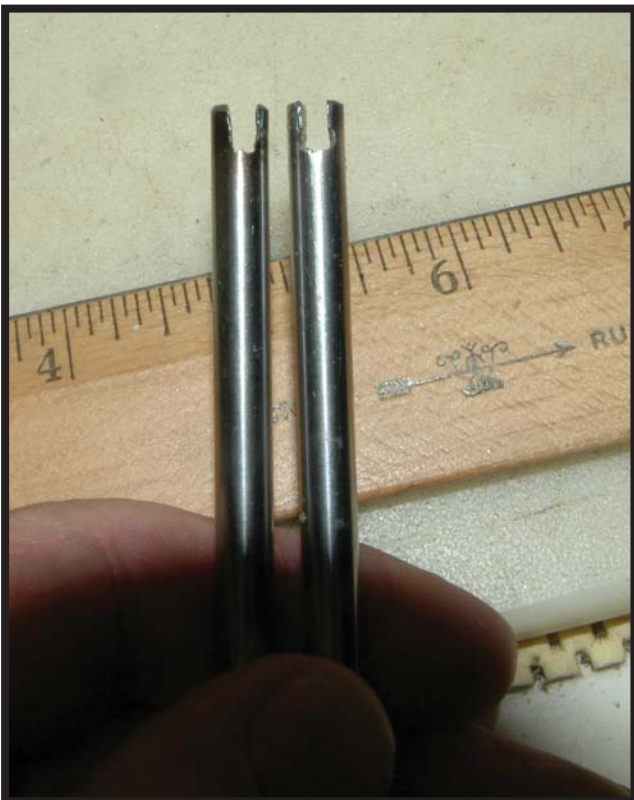


I've often said that one cannot work on cuckoo clocks without a set of wire benders. That is especially true here.

These photos show some special, heavy duty wire benders that I made and use to put in new perches. They are nothing but drill rods with a handle put on one end and a slot put in the other. The slot was cut with a hack saw and the widened with one of the small diamond disks driven by a Dremel tool. I widened it just a little bit wider than the diameter of a bird perch wire.

I did not heat quench and temper the slotted ends but if they ever break, I will attempt that as a fix.

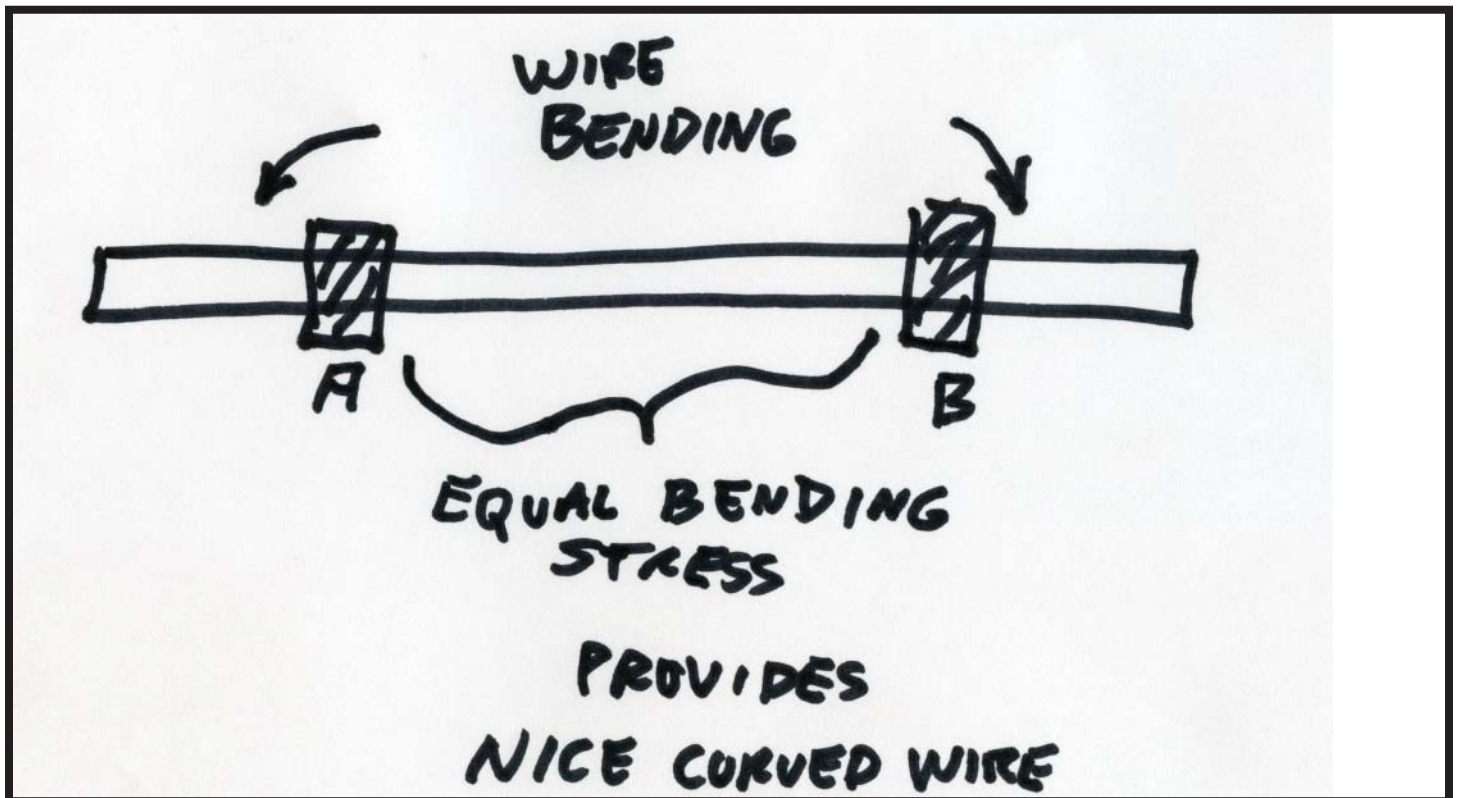
These tools are especially useful in making adjustments to the bird perch after the movement is installed in the case. You will see that in this example.



The quick and dirty sketch below, attempts to point out an important point of using wire benders.

It shows a wire with two wire benders. All of the plastic deformation of the wire will take place between the two wire benders. The ends of the wire on either end have no stress at all. By twisting the two wire benders, one places a constant bending stress on the wire between them. If taken to the plastic limit, the wire will have a nice equal bend between the two benders. That is important when you are reaching down into a cuckoo clock case and trying to bend the perch wire. You don't want to damage the movement. You can bend the wire safely and don't have to take the movement out of the case - except once in a while.

These heavy duty benders are extremely useful, inexpensive and easy to make.



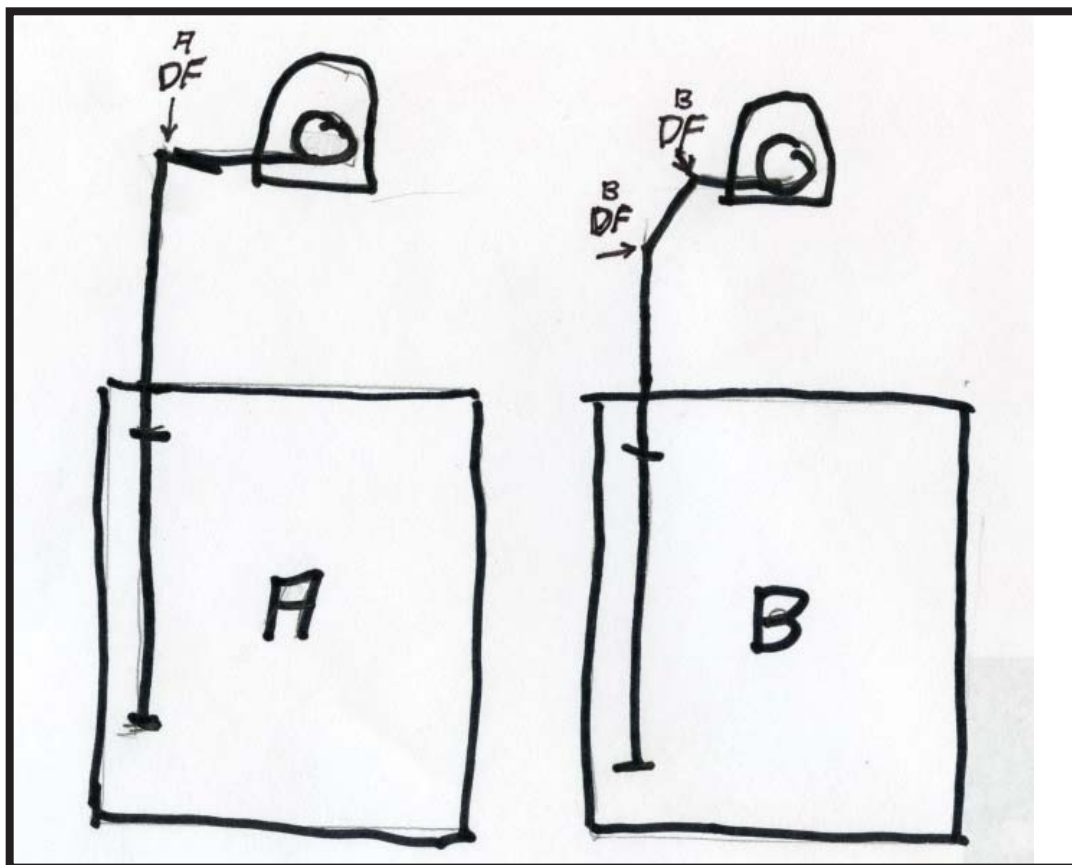
Don't worry we are going to get around to the clock example. But first we need to look at one more point about cuckoo perches.

The sketch bellow illustrates two cuckoo clocks as seen from behind looking into the case.

The perch on the left is what you see on most cuckoo clocks. The factory makes them this way. The perch goes up and then makes a 90 degree turn to the right where it is lined up properly with the height of the bird door. That is fine for those factory made perches, but when one is not quite sure how long it should be on a new perch anxiety sets in - often solved by trial and error to get it to fit.

There is only one degree of freedom of movement with this approach. If you bend it down, the bird will list to the right. If you bend it up, it will list to the left.

There is no real need to make it just like the original with only one degree of freedom.



The sketch on the right is a much more reasonable approach for bending a new perch. It utilizes two 45 degree bends. A 30 degree and a 60 degree bend will also work.

If you blow it and have the bird too high or too low, you can reach in with your heavy duty wire benders and bend it in place without having to take the movement out of the case. That is nice.

In the example you will see where this is exactly what I had to do since I made it too short on the first try.



Here is the clock in our example - after I finished the job. It was made by LUX. I think this is the first Lux clock I've ever worked on. The customer said that he remembered hearing and watching it, but it had been many years since it had been run.

I tested the time side of the original movement with one of my MicroSet timers and while it was far from perfect, it was certainly acceptable

The problem with the movement was the strike side. It simply would not stop striking. It ran and ran and ran.

I pointed out to my customer that while I might be able to fix it, he would still have an old count wheel clock. It had several bushings in it that I could see on the back side of the movement. He had no idea how many times it had been repaired. I also pointed out that the new movement would be a rack and snail movement which is better than the older movement.

After costing out the price for a new movement, he said to go ahead and put a Regula 25 in the clock.



The old movement is on the left and the new one on the right.

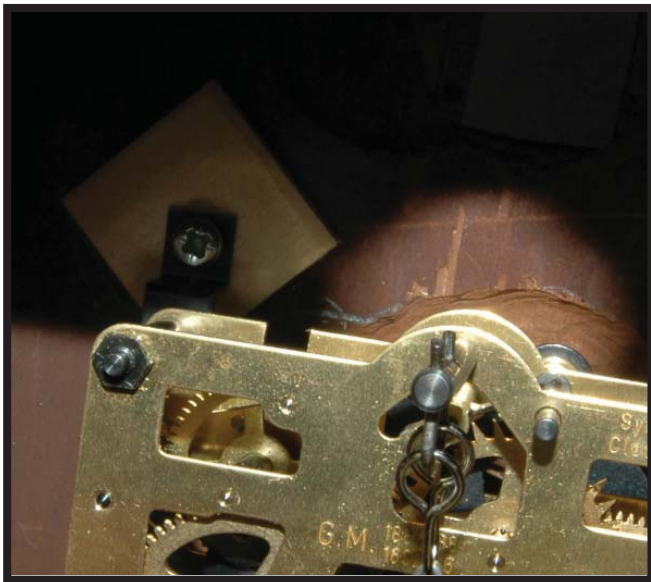


Step One: Take the perch off the new movement and install the movement in the clock.

This is the inside of the clock after I put in pads for the feet of the new movement and milled out a space for the rack and other parts. That was interesting since the clock case was made out of some composite material - not wood. The case was very thick. I feared a problem of not having enough barrel sticking out to be able to install the hands. It worked out OK with this arrangement.



Please note the pencil line on the front of the case. That represents the top of the front plate.

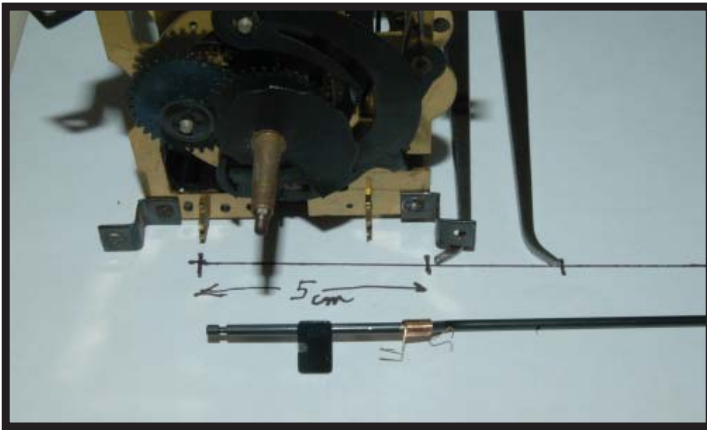


I put that mark on there when I was installing the movement in the case as is shown here. It will help a lot to figure out how long to make the new perch.



I put that line there so I could measure the distance from the top of the front plate of the movement to the location I want the perch wire to be relative to the door. I used an outside calipers as you see in the photo. I have the left caliper leg a little above the bottom of the door so the bird's feet will clear the door threshold.

Now lets see how we use this.

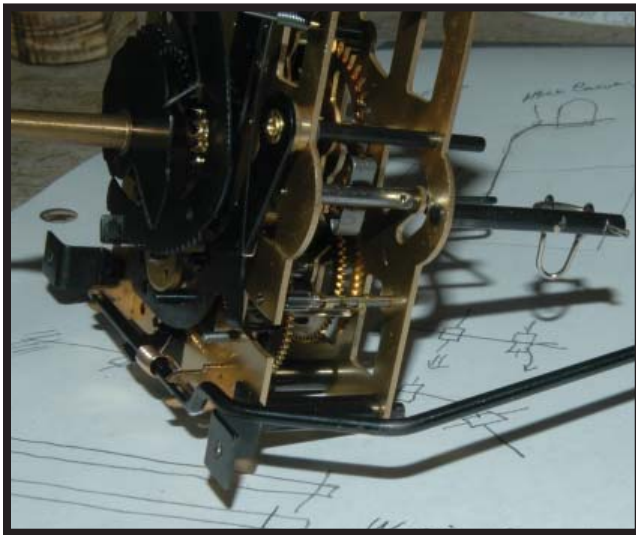


I happen to know that the distance from the top edge of the front plate down to the top edge of the bottom tab which holds the perch in place is 5 cm. I've shown this in the photo with a line on a piece of paper under the movement. I've also shown the calipers in the photo.

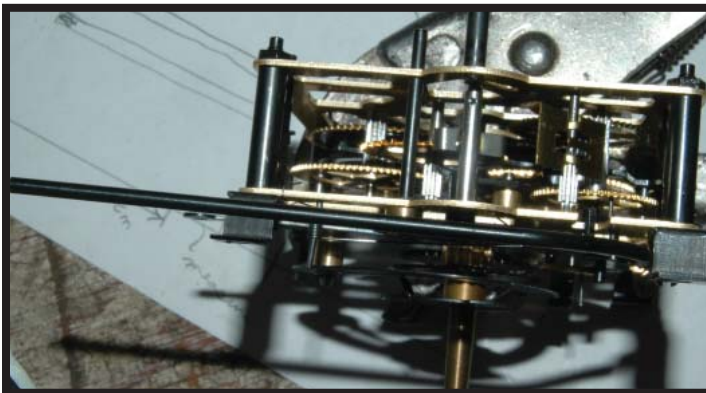
We know that the 5 cm plus the distance measured by the calipers is the height of the perch - which is what we are looking for.

Thus one can use this simple paper template to make the two 45 degree bends to get the height we want.

I did just that.

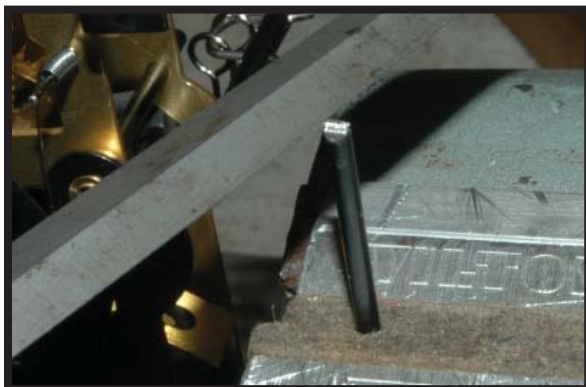


This photo shows the result of making two 45 degree bends. The perch is just sitting loose in the movement so that I can test it. It looks pretty clean. One problem. I didn't try to make the bends in the proper direction. I didn't have to because I know that I can use my vice grips to grab the wire just below the first 45 degree bend and twist the wire into the proper position. I did just that with the target of having the perch wire in the plane of the feet of the movement. We will later find out that was a mistake in this example. The perch should have been in front of the plant of the movement's feet.



When I was finished it looked like this when looking down at the movement.

The next task was to cut off the perch wire so it extends about three fourths of the way across the movement.



One should than be sure to file down the cut end of the wire for the sharp edges can take a nice slide in one of your fingers.



Well, how did it work?

Not as well as I'd hoped but certainly good enough for a first try.

Here you see that the birds feet are hitting the threshold of the door. I need to move the perch up a bit.

My large wire benders came to the rescue.



I moved the perch up a bit by bending the wire as you see here. I could not bend it at the lower 45 degree bend because that bend was too near to the top of the movement and I couldn't reach it. Thus I made do and bent it as you see here.

You can also see that the bending moved the bird over to the left a bit and now she hits the edge of the door. That is easy to fix. Move the bird.



Here you see the perch at the proper height and the bird is properly located in the door. I usually keep them to the left a bit to prevent the bird's beak from hitting the door.

I thought I was finished.

But!



When I connected the wire from the bird to the door it worked OK but the door came only half open. I needed a new wire. This shows the old and new wires. The new one worked. The door was fully open.

Now I was done.

Not quite.

As it turned out the bird did not come out of the case. It sat back inside and one could hardly see it.

In retrospect, that was caused by the thickness of the front wall of the clock and the pads that I inserted under the feet of them movement and my plan of putting the perch in the plane of the feet of the movement. I needed to have the perch in front of the plane of the movement's feet.

Unfortunately I was pretty frustrated at the time and failed to take photos of the my fix for the problem.

I could not use my large wire benders to fix it. I had to take the movement out of the case and bend the perch wire forward so that the perch was about half a cm forward of the plane of the movement's feet. I did use the benders to make the final adjustments to the perch.

That worked.

The birds head came out of the case and bobbed up and down when it cuckooed.

All was well.

I am sure the customer is happy with it.

I hope you enjoyed this quick and dirty piece and that you find these ideas useful in your shop. It was fun to work on.

Lloyd Lehn

21 July 2011