An inexpensive coil winder for making RFID antennae

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Cost

- The coil winder was purchased on Ebay for $50 (plus $20 shipping)
- Excluding the spool of enamel-coated magnet wire, the other parts cost $1.79 or were scraps lying around in my basement.

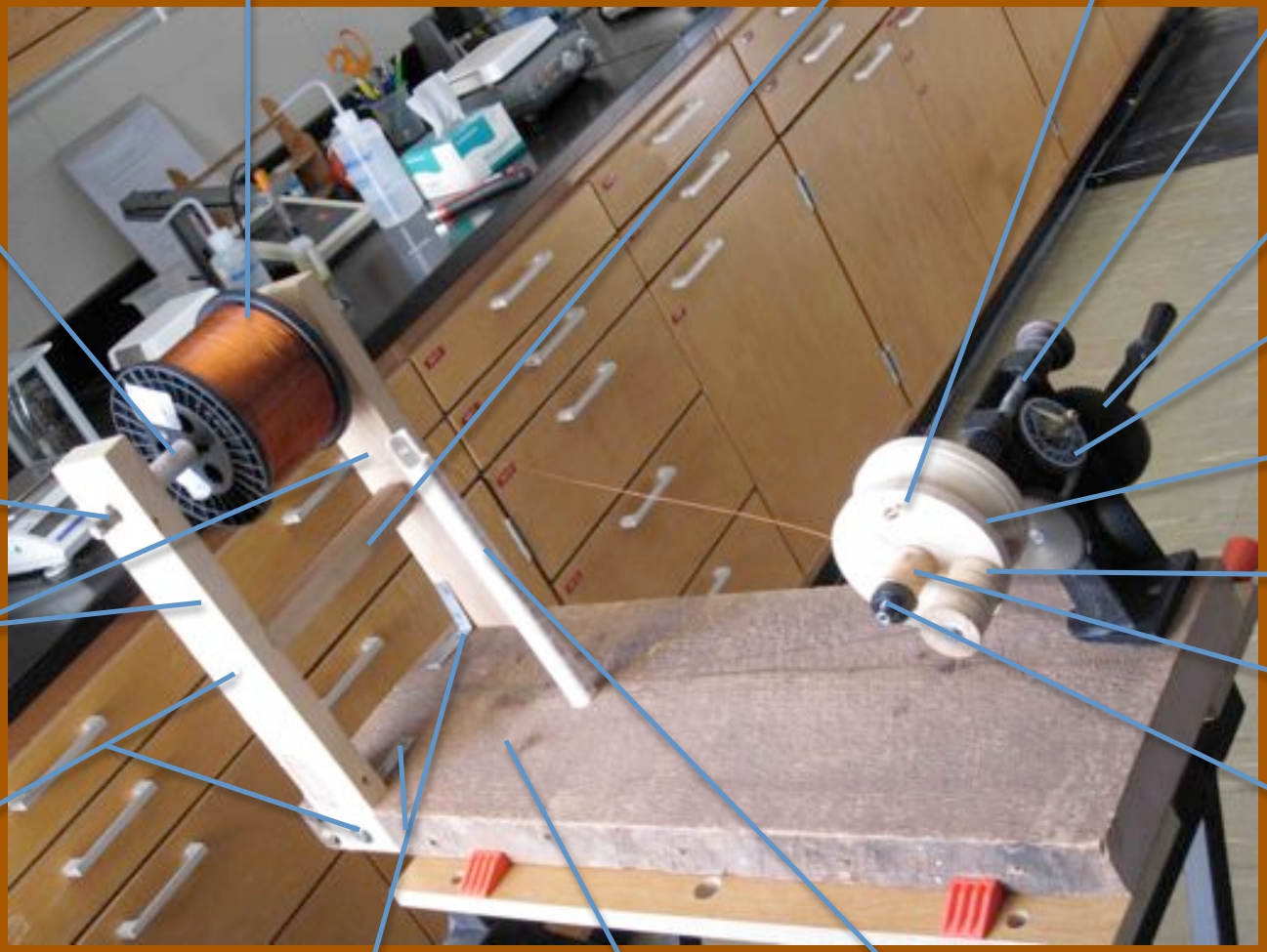
Construction Time

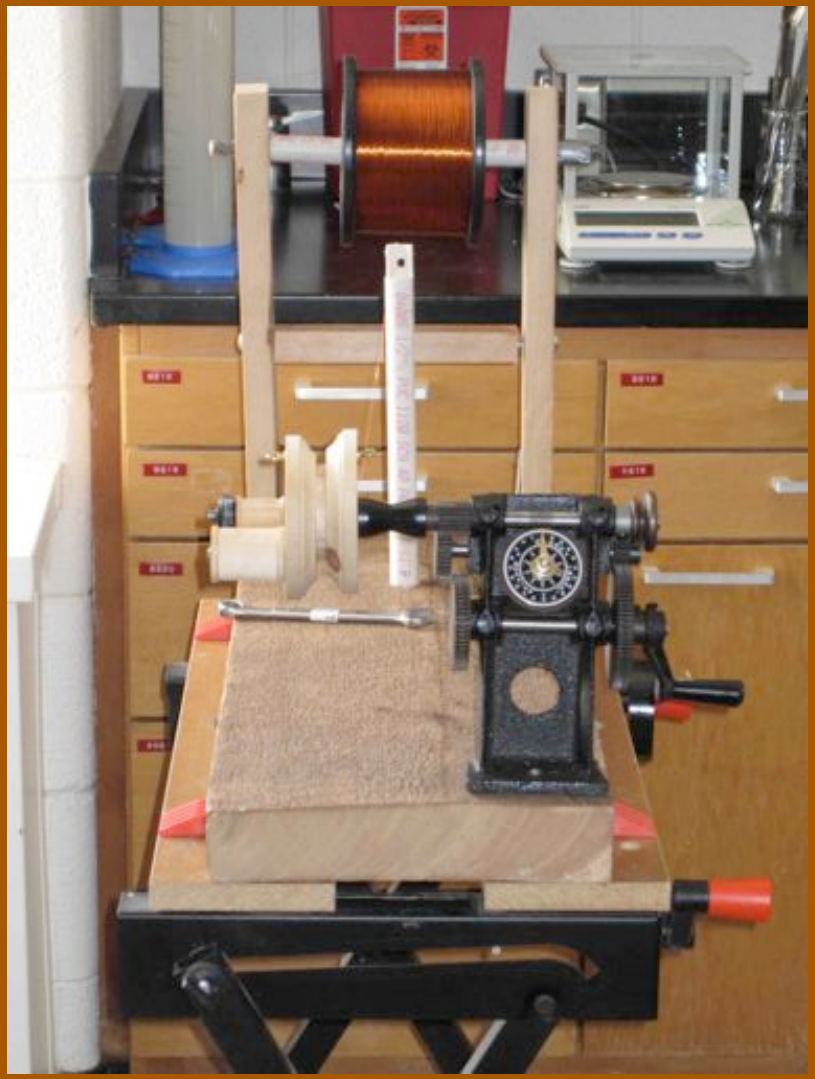
- It took between 1 and 2 hours to construct the coil winding jig and the coil form.

Mounting the Unit

- I mounted the unit on a portable work bench, but it could easily be clamped to a counter top.

Parts Diagram



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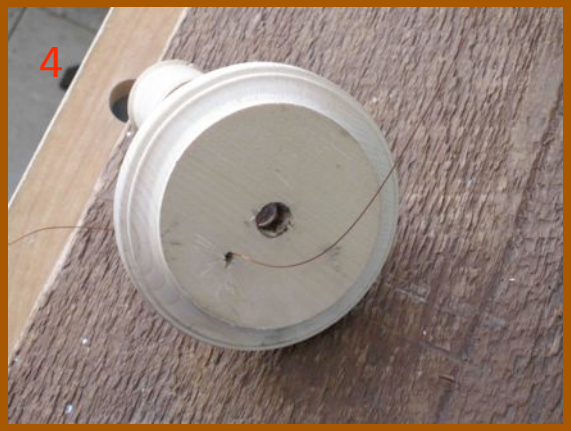
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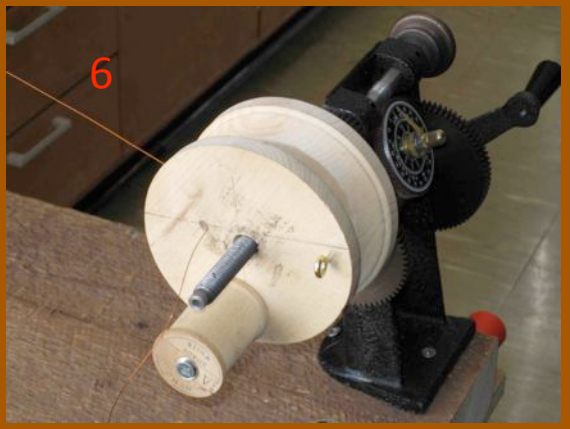
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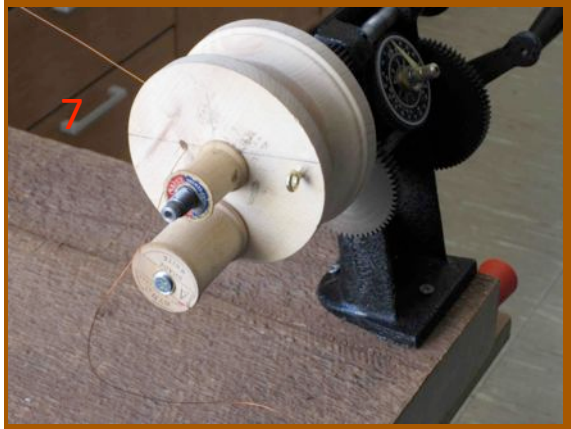
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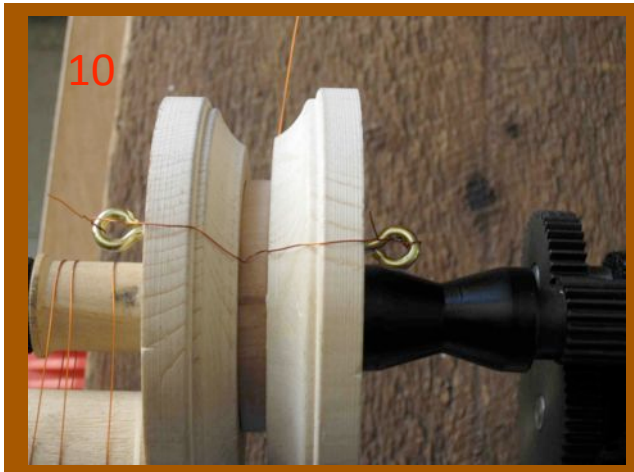
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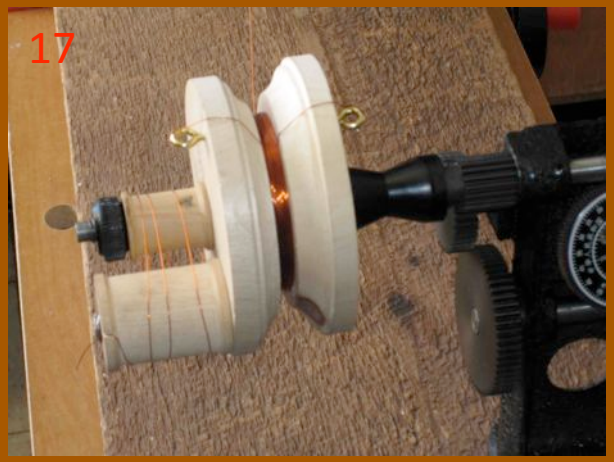
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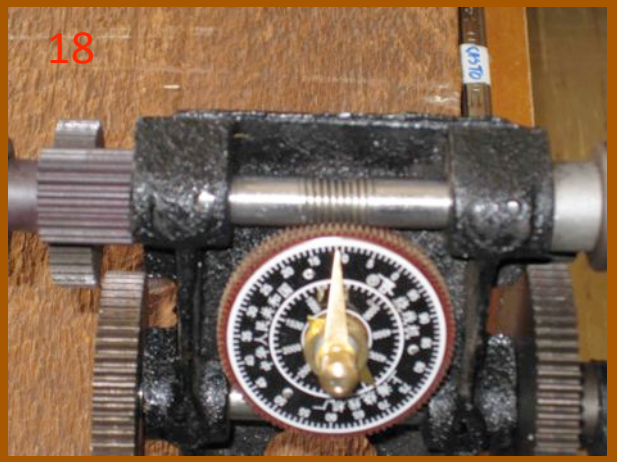
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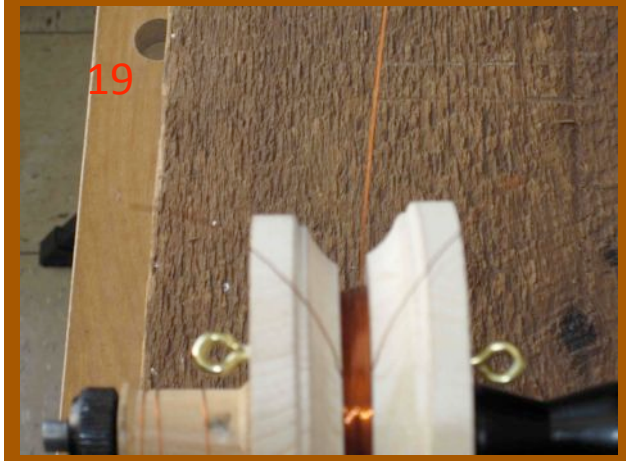
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Instructions etc.

- Photos 1 & 2: The main portion of the coil form was made from 2 round trophy bases and a 6 mm-thick round wooden disc (59 mm diameter) purchased from a craft supply store. The disc was glued to the center of one of the trophy bases and a hole a little larger than the winding arbor diameter was drilled through the center of each trophy base.
- A spool was attached to the outside face of the 2nd trophy base (the one without the disc) in order to store the coli lead during winding (see #9).
- Photo 3. A small hole was drilled in the trophy base with the spool in order to feed the coil lead through (see #3, 4, 5). The hole falls within the diameter of the disc on the other trophy base so it will be held firmly once the winder nut is tightened.
- Photo 6. A second spool was drilled and used as a bushing so the winder nut had to be threaded over less of the winding arbor. This reduces set-up time between coils (see # 7). You could probably use one larger spool as both a bushing and a lead spool.
- Wind the coil lead (37 cm of magnet wire in my case) around the two spools so it is out of the way during winding (#9).
- The two screw eyes allow a small length of wire to be placed in the groove of the form. This makes it easy to gather the coil and remove it from the form (see # 10, 11, 17, 19, 20, 22). Two push pins or two razor slits along the edges of the trophy bases would also work to secure the wire and using the slits is much quicker.
- The wire guide keeps the wire at a constant angle to the coil form (see # 12 & 13).
- The PVC bushings can be tightened against the wire spool by turning the left lag screw of the bushing tension bar in a clockwise direction (#15). This pulls the support arms together, driving the bushings (see #14) into the wire spool. Using the correct tension keeps the wire from excessive unspooling or from being too difficult to unspool. When winding coils, your hand works as a good brake/adjuster as well (#16).
- My coils were 111 turns (wraps) as indicated on the turn counter (#18). Because the winder is geared at 8:1, I only had to crank the handle 14 times to wind a coil.
- Use the wire from the screw eyes to gather and secure the coil (#19, 20).
- Unwind the lead from the storage spools (21).
- Remove the nut, spool bushing and face of the coil form. Then, remove the coil from the form (#22).
- Use electrical tape to secure the coil (#23). It is now ready to be tested to confirm the appropriate inductance (1.35-1.45 mH).