

## A VERY USEFUL TOOL

By Luiz Amaral  
PY1LL/AC2BR

Sometimes we want to mark or brand our metallic tools (or even other metallic objects) in an indelible mode.

Paints are removable and to use small grinding hard tools to write on our pieces may be a problem.

The present article shows a very simple method to do it with a very low cost.

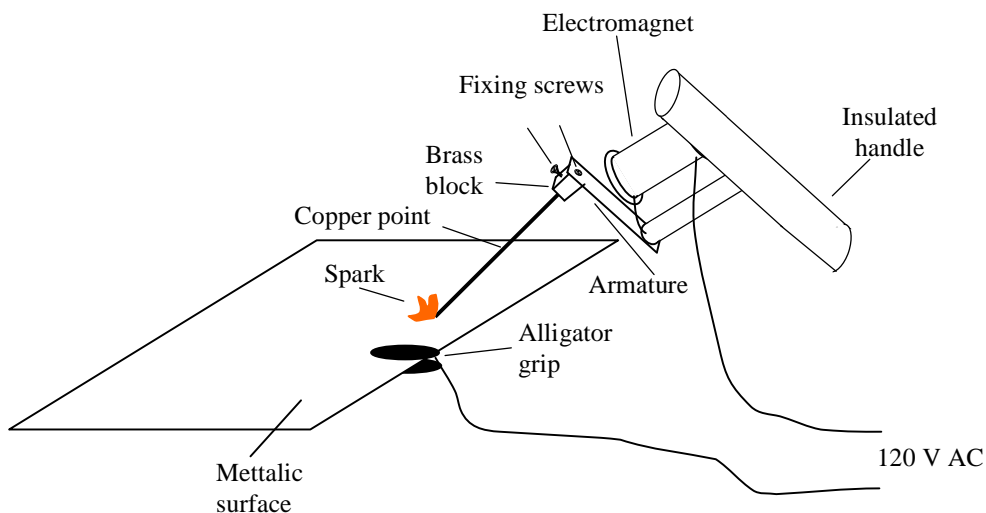
The figure shows the sketch of the tool and its working principle is obvious enough.

When the copper point touches the metallic surface to be marked the circuit is closed and the electromagnet coil attracts the armature pulling it up. This movement disconnects the point from the surface generating a spark that melts the copper and transfers it to the surface.

So, with suitable movements one is able to write or draw what he/she wants on that surface, resulting into a copper color drawing on it. As the surface itself is melted in the process, the draw stays there forever.

If the copper point wears down, it can be easily replaced by a new one made of a piece of a rigid bare copper conductor.

Clearly, for copper or brass surfaces, the process results in marks less visible than for iron or steel surfaces (perhaps one can use iron or steel points in those cases).



The brass block, fixed to the end of the armature with a screw, can be got from an old AC wall switch or inlet, as they just use brass blocks for connection to the wires.

With little training it is possible to mark metallic pieces with excellent results. But I recommend you train a bit on metal from scrap before trying on a real tool or important piece.

Despite the insulated handle, the user must avoid to touch the metallic objects as they are energized with 120V from an inlet and electrical shocks may occur (especially against ground). An isolating transformer is a good solution for this problem. The use of DC can lead to better effects if used with correct polarity by the unidirectional copper deposition on the tool, but it is not a must.