Optimo Shutter Repair

by Michael Roth

The Optimo shutter is a pneumatic shutter designed by Wollensak in 1909 and was sold until about 1930. In Europe it was sold as the Velosto shutter. It is a high-end shutter with speeds from 1/300 to 1 second plus B and T. For a while it was the fastest leaf shutter on the market, even faster than the famous Compound and Compur shutters at that time.

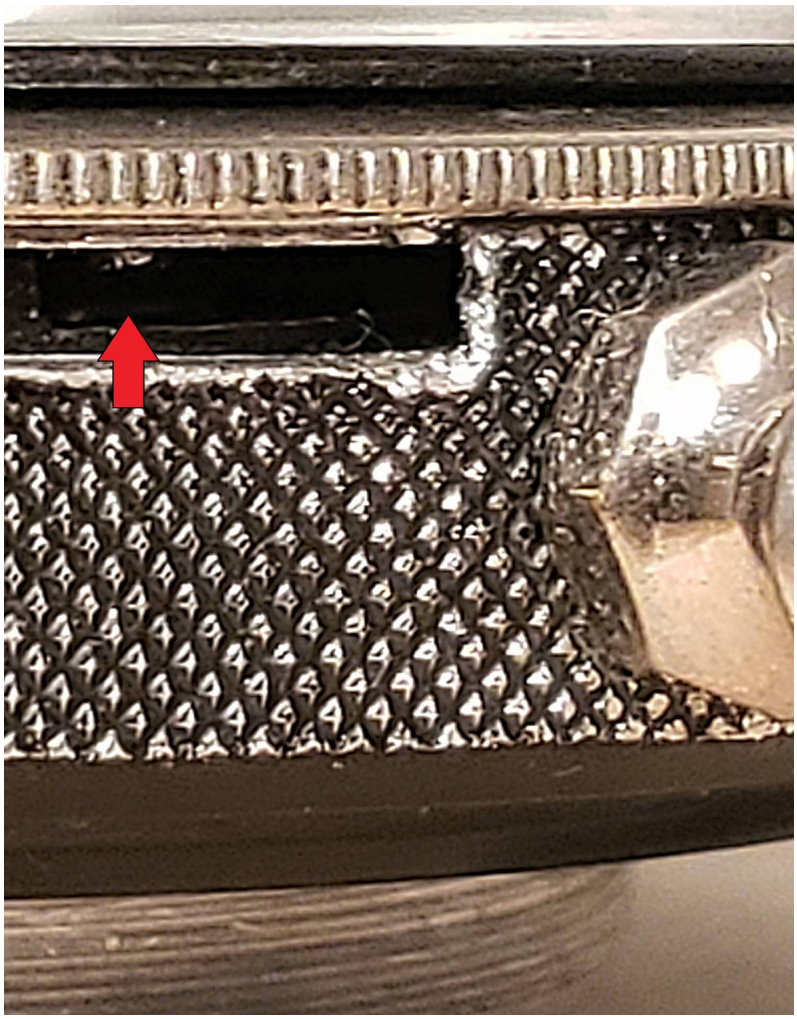
This particular shutter had a faulty diaphragm blade. I found the helpful booklet “Photographic Inter-Lens Shutters” from 1917 on the web to get started. Fixing the diaphragm blade requires a complete disassembly of the shutter. The following pictures show a step-by-step disassembly and can be used in reverse to put it all together again. Make sure you arrange all the parts in the order of disassembly so it is easier to find the right parts during reassembly.

Needless to say, this should only be tried by technically savvy people experienced in camera repairs. If you have never done something like this before and don't want to risk messing things up you should find a professional repair service.

Step 1:
The first challenge is taking off the faceplate since there are no screws involved. To do this locate a little lever at the right end of the slot for the aperture lever (see red arrow and next picture).

Step 2:

The red arrow points to where the lever is. The lever needs to be pushed to the right. A small micro screwdriver works well for this. Then a little twist and the faceplate comes off.

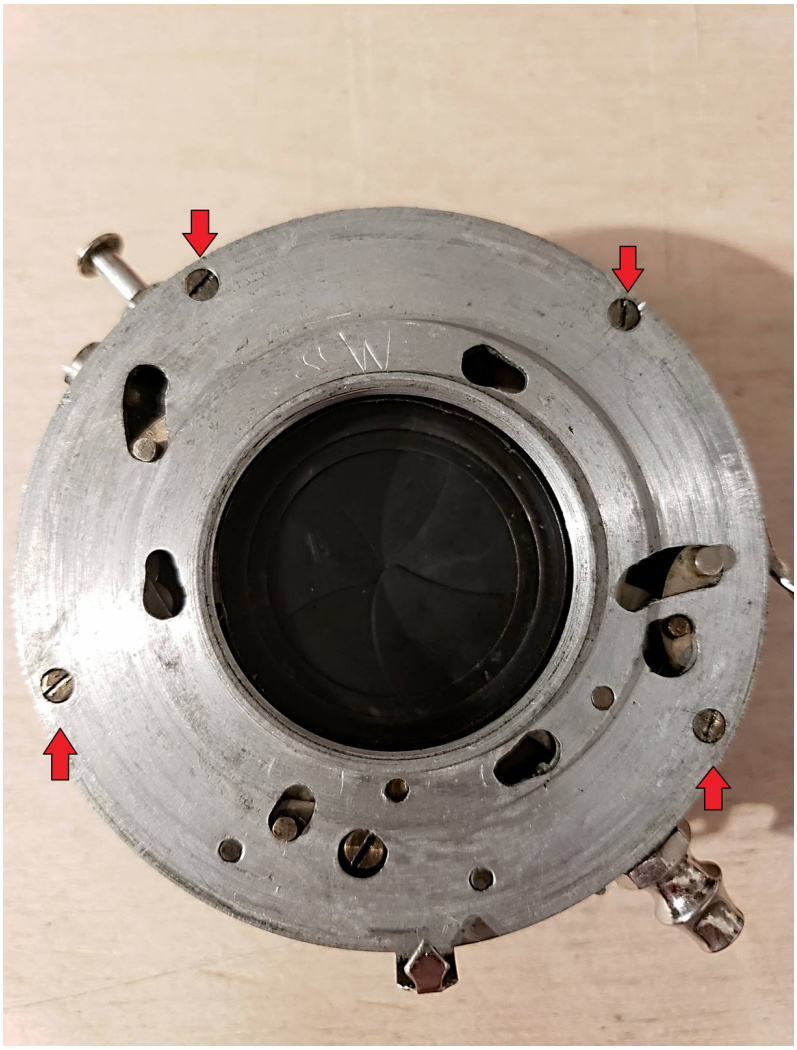


Step 3:

The next plate comes off easily.

Step 4:

Now remove the four screws and take off the cover plate to reveal the guts of the shutter.

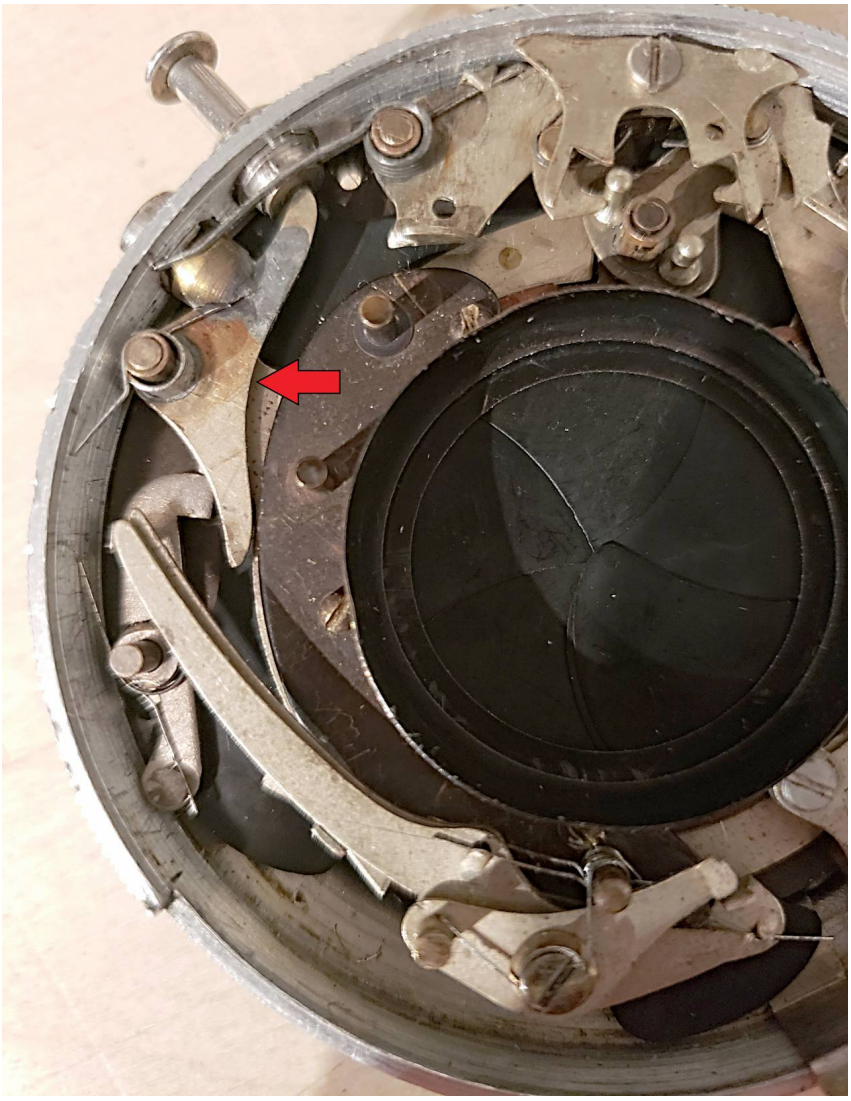


Step 5:

The following pictures show step-by-step which parts and associated springs are removed. I don't know all the names of the different parts, so the pictures will be the main guide. We start with the two parts indicated by the arrows, including the spring. Make sure the spring does not fly away while you take it off!

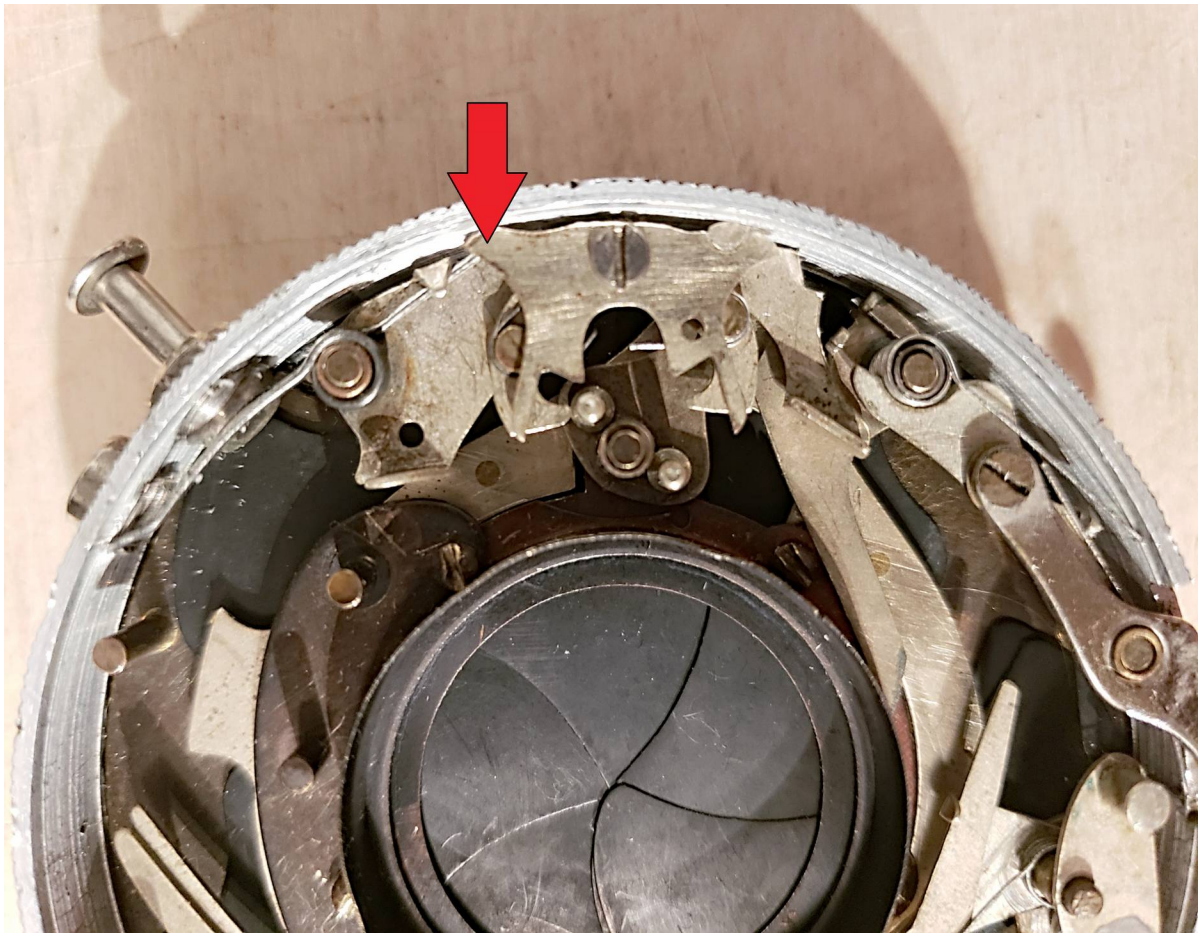
Step 6:

This part and the spring come off next.



Step 7:

This assembly indicated by the arrow and the associated spring come off – this is a large spring that has quite a bit of tension!

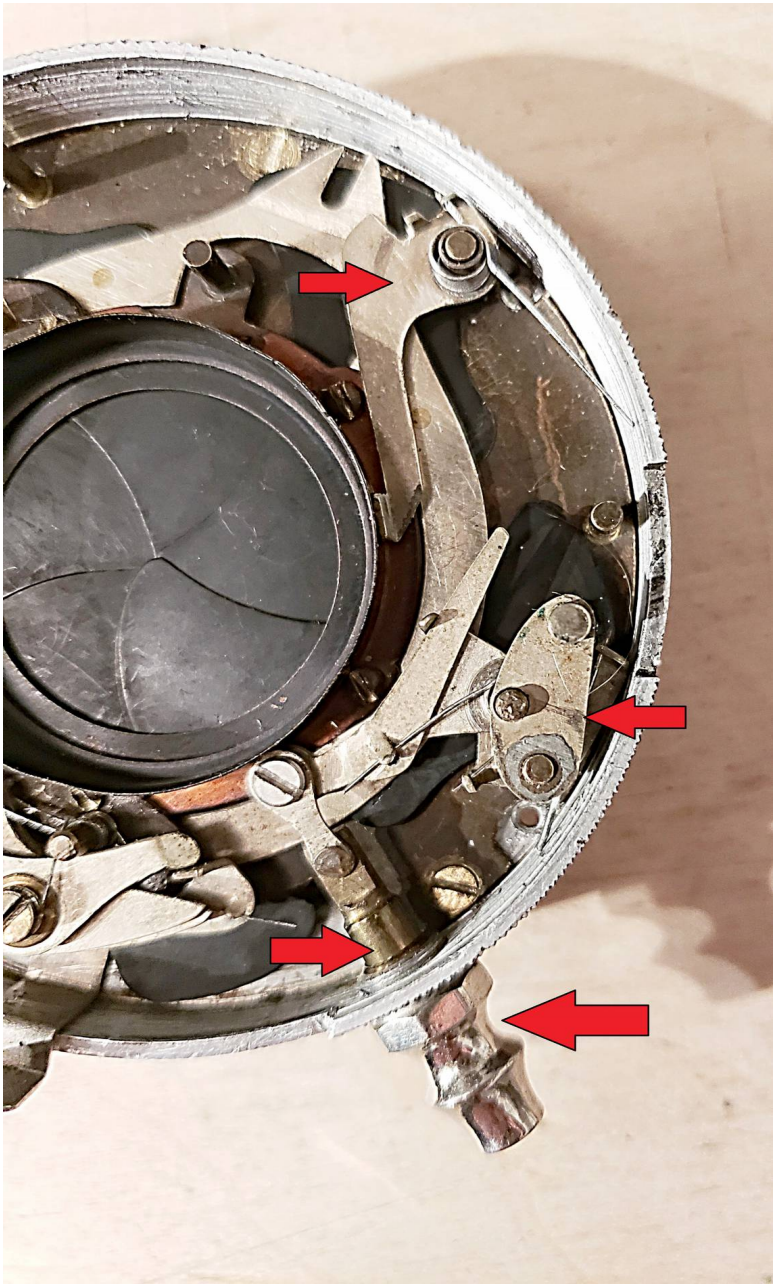


Step 8:

Next in line are these two parts and the spring below the lever.

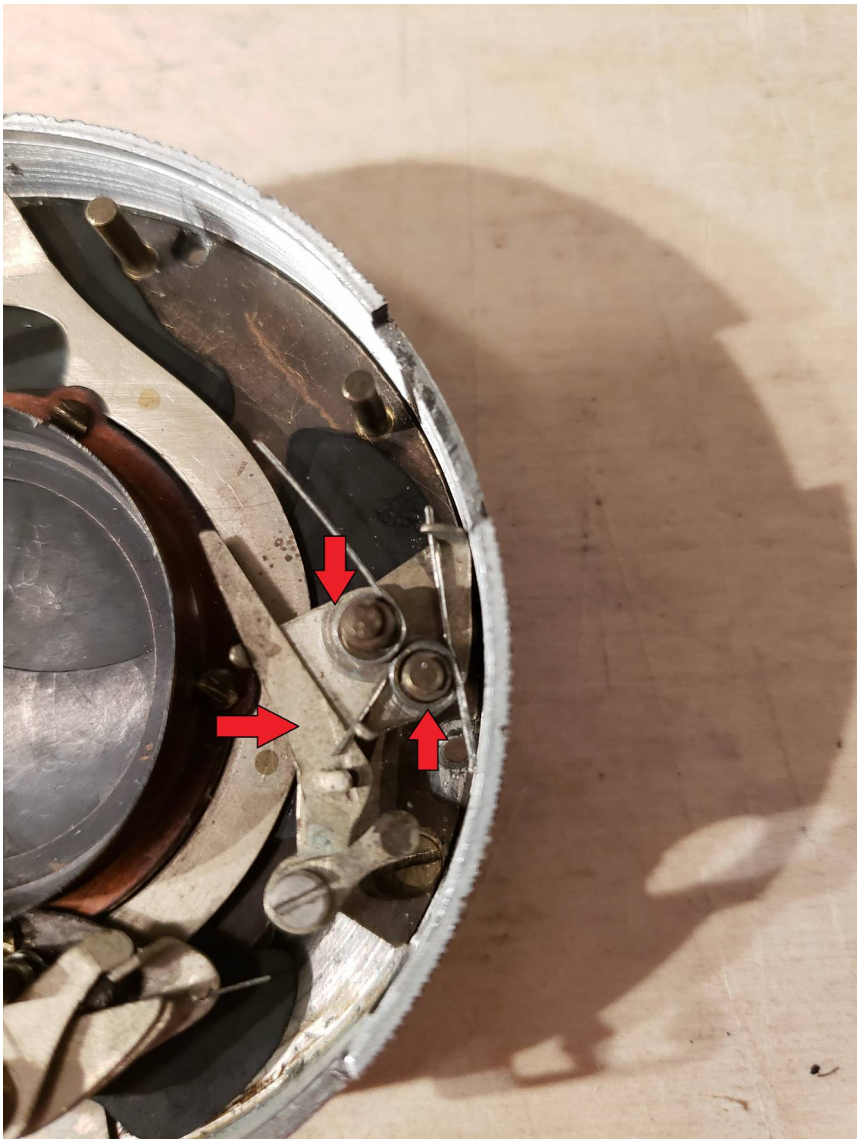
Step 9:

The next parts to be removed include the outside cover of the pneumatic valve. This can be unscrewed with the help of a small wrench. During reassembly you will need to pay attention to the location of the springs.



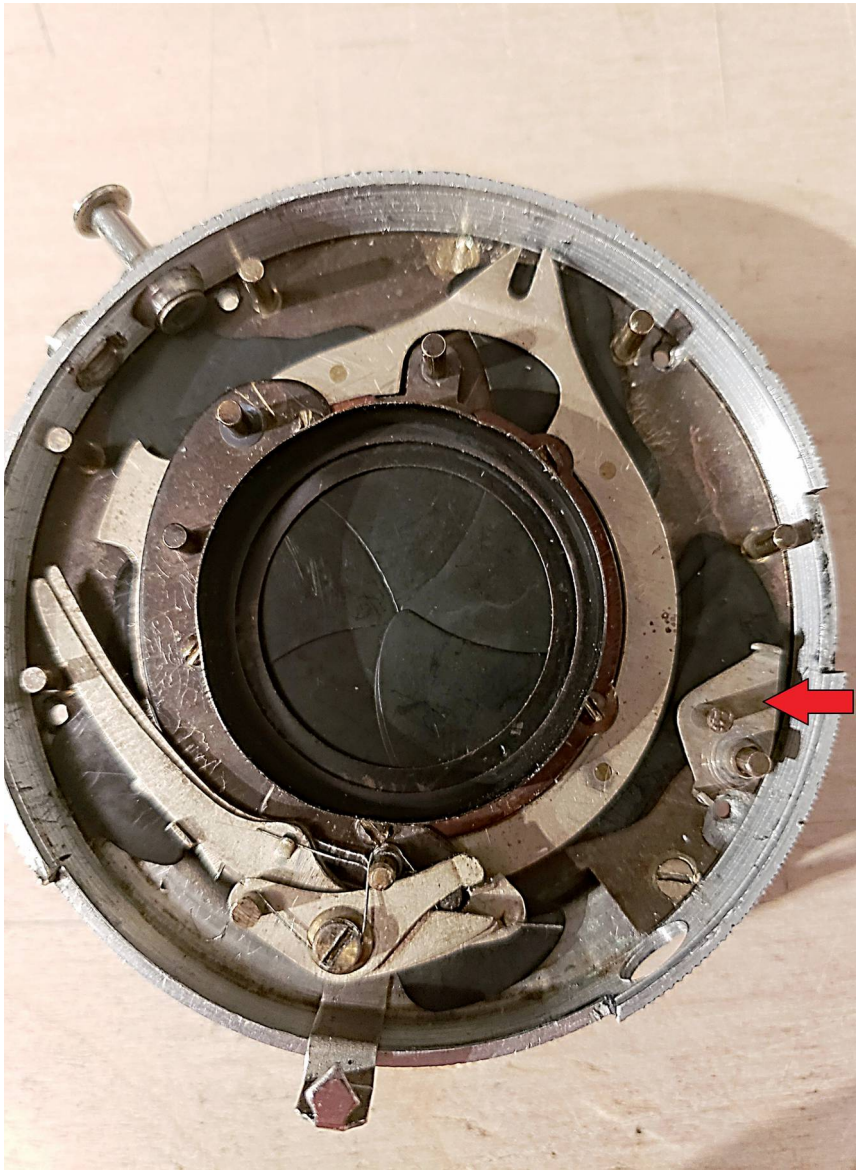
Step 10:

Now remove the parts and associated springs as indicated. This picture will be an important reference for the location of the springs during reassembly!



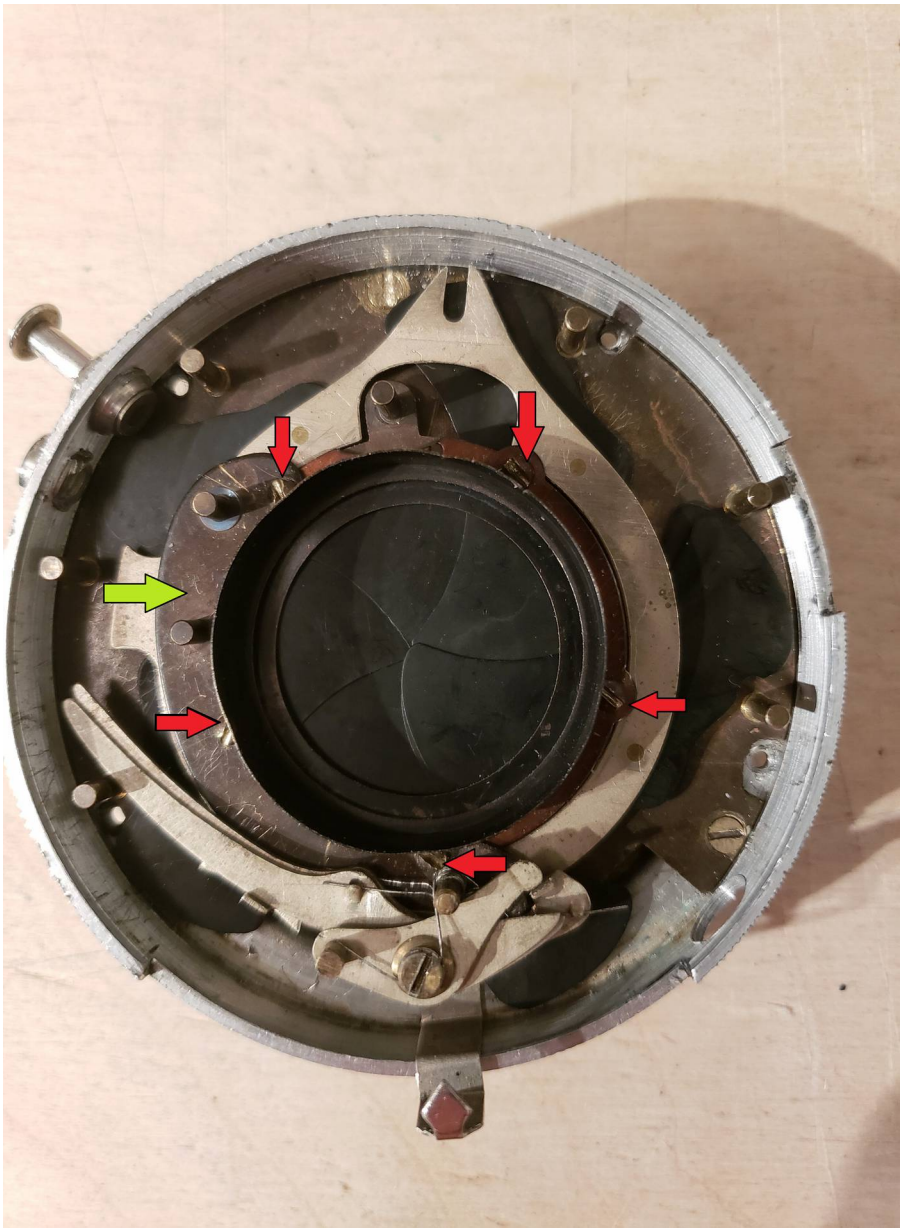
Step 11:

Now remove this last part and the most challenging part is completed.



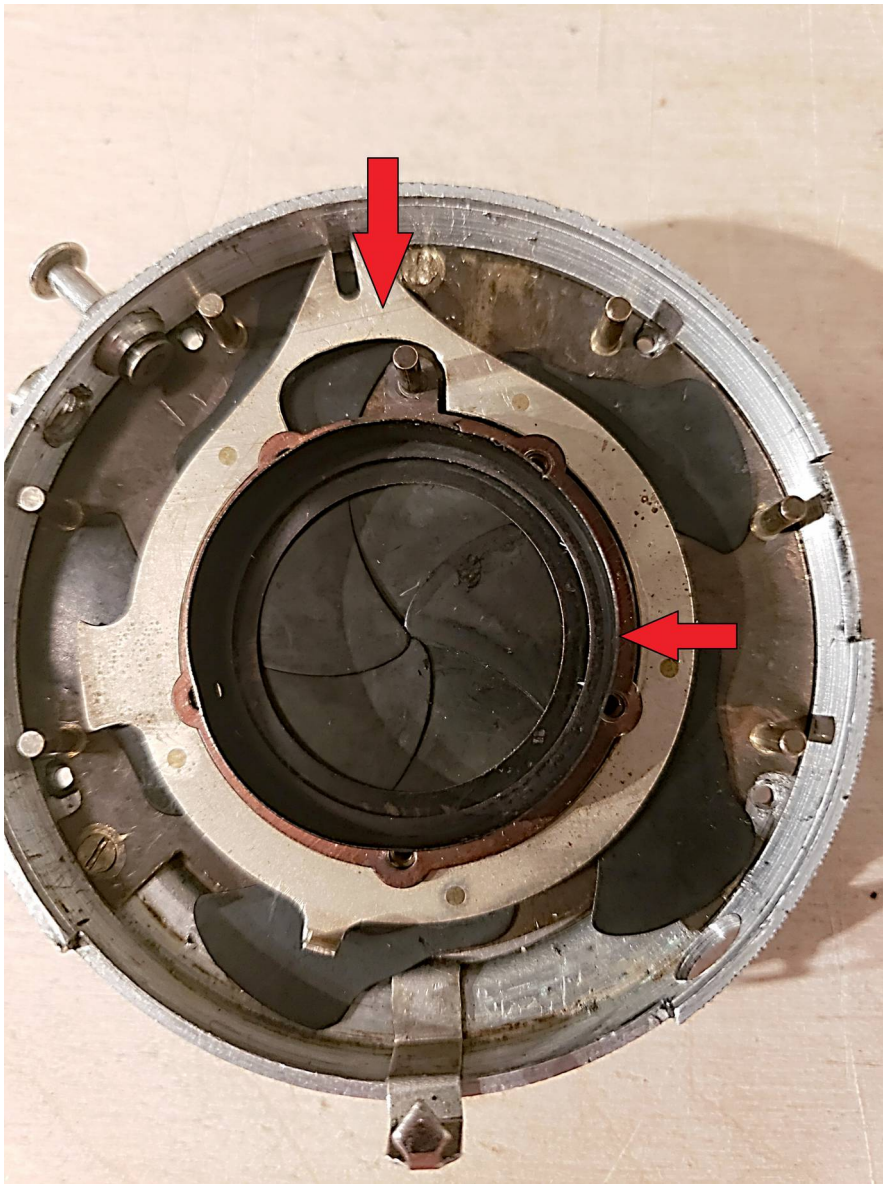
Step 12:

Next remove five screws shown by the red arrows and remove the assembly indicated by the green arrow. Thankfully the entire assembly comes off in one piece, there is no need to remove any more springs! (By the way, this assembly can benefit from some lubrication during reassembly – I found that the T setting may not work properly due to a lack of lubrication of this part.)



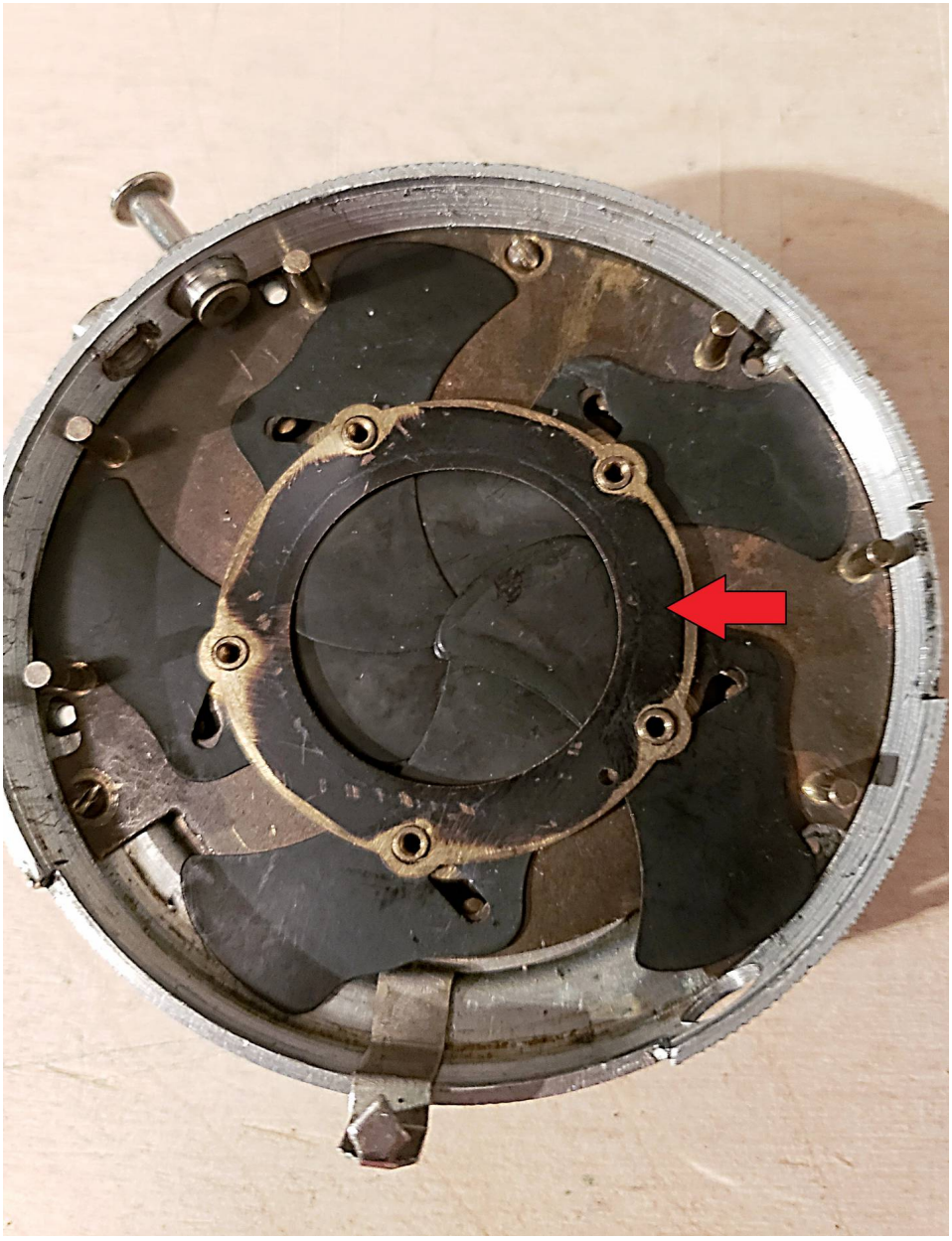
Step 13:

The two indicated parts – the cover and the underlying ring – can now be removed.



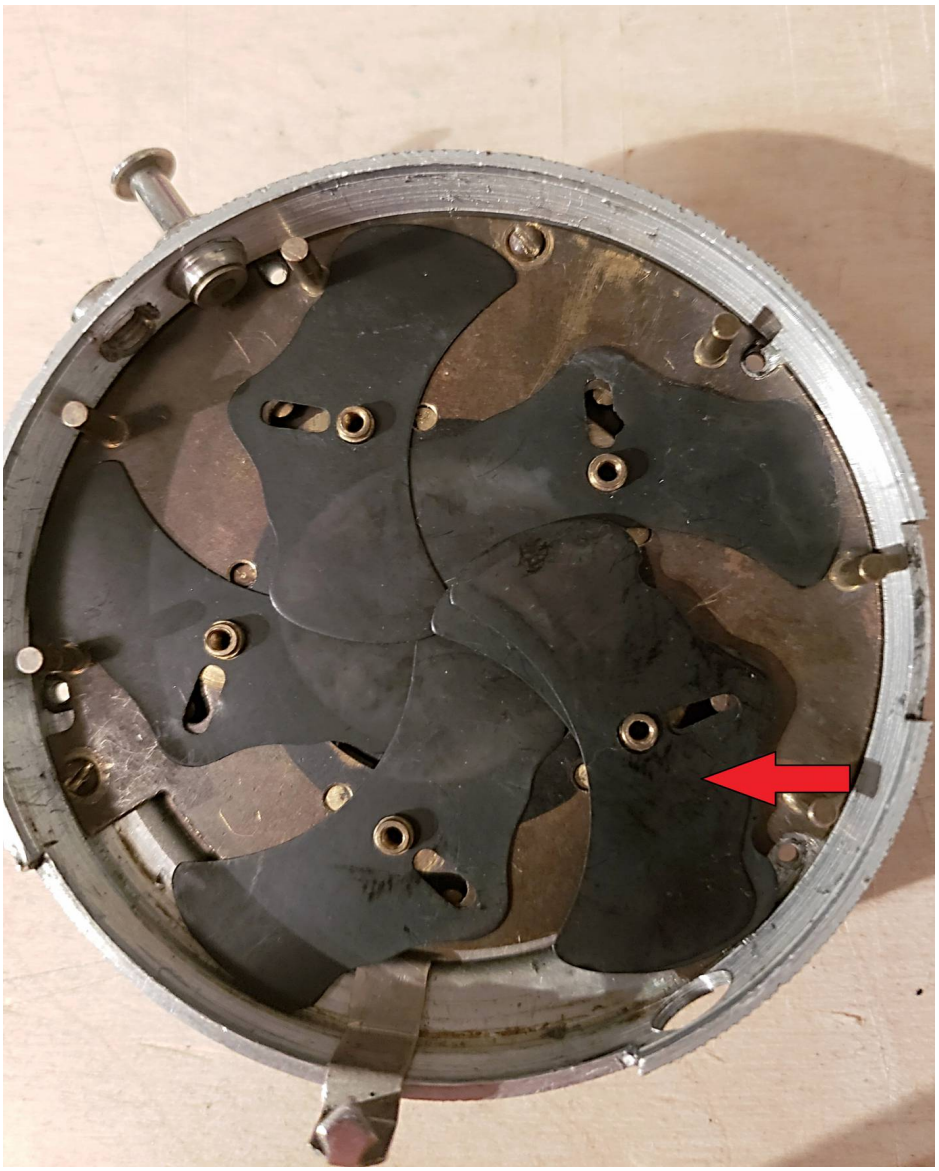
Step 14:

Next this ring is removed to reveal the shutter blades.



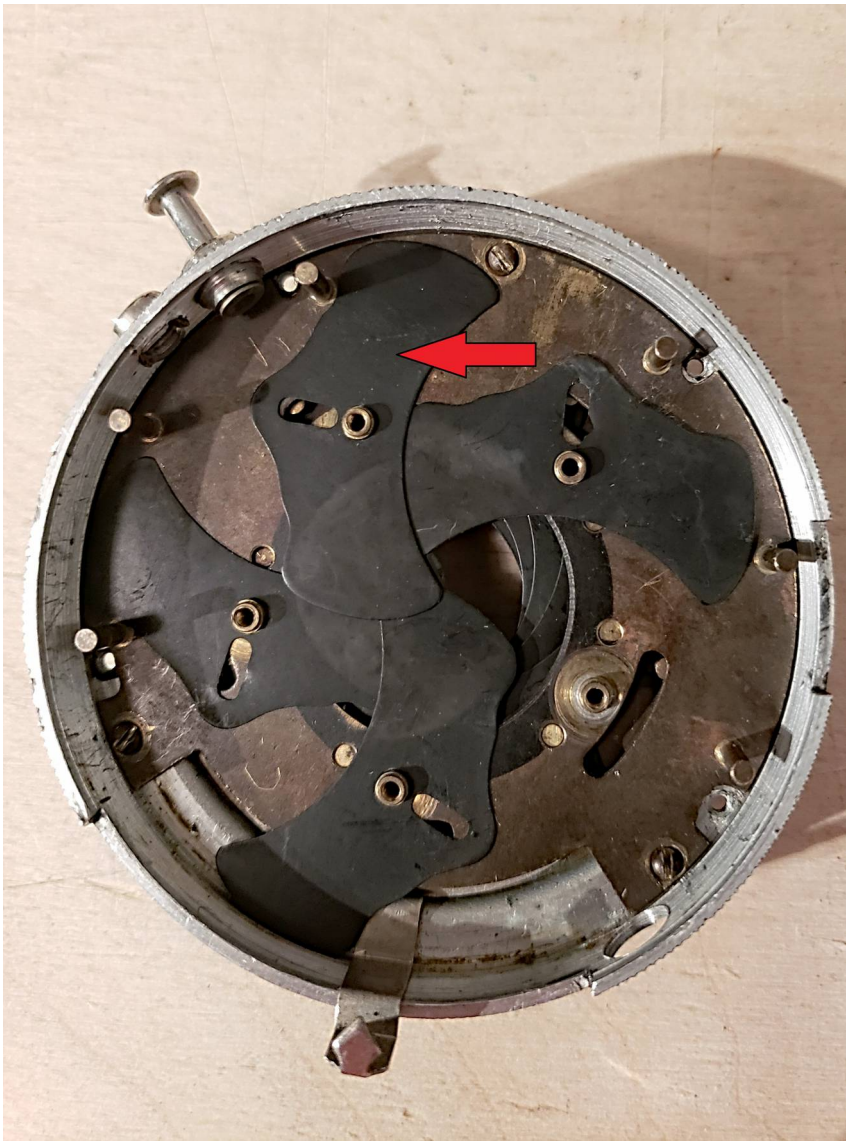
Step 15:

The shutter blades are removed in the correct order which should be followed in reverse during reassembly. Note that there are two shutter blades on top of each other at the beginning!



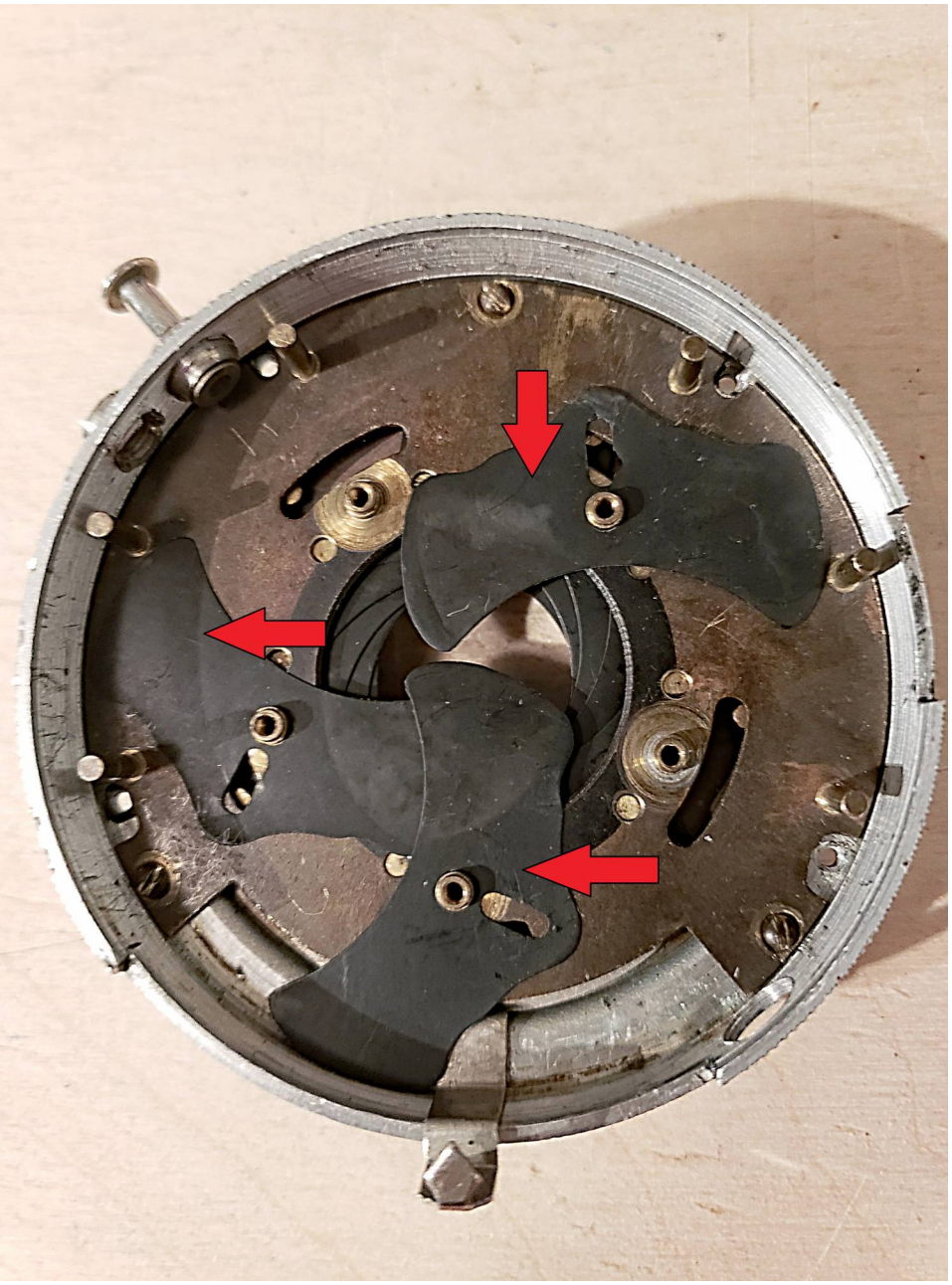
Step 16:

This blade comes off next.

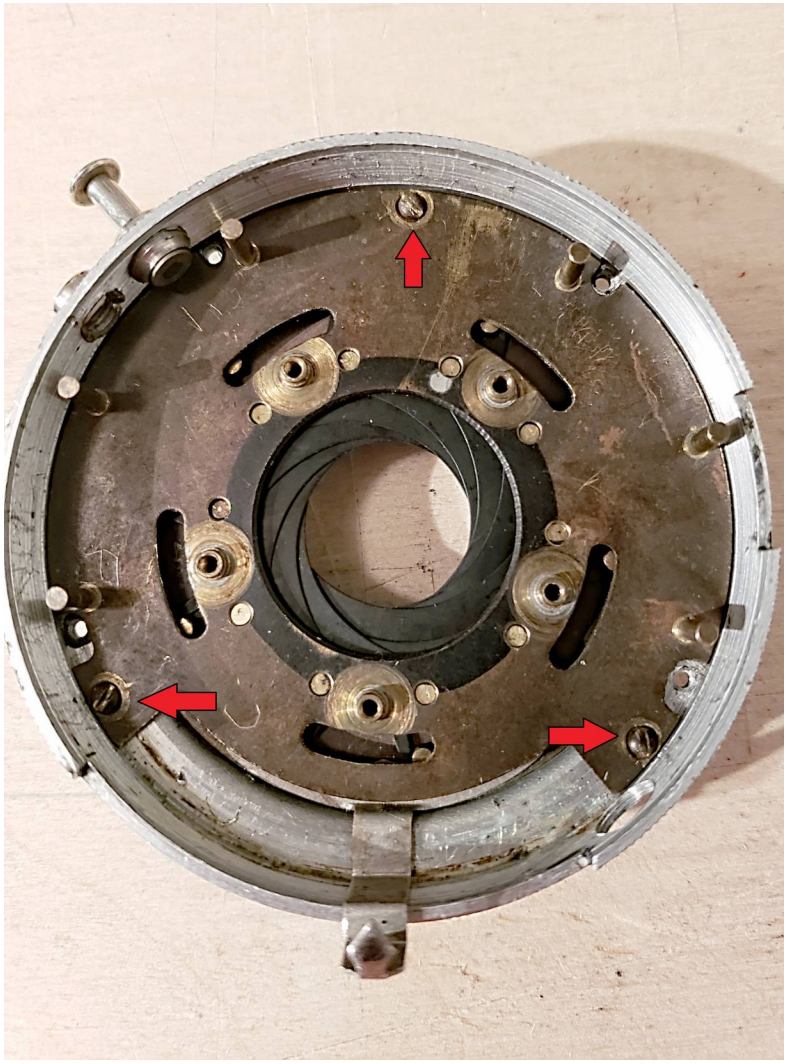


Step 17:

Note the order of the last 3 shutter blades.

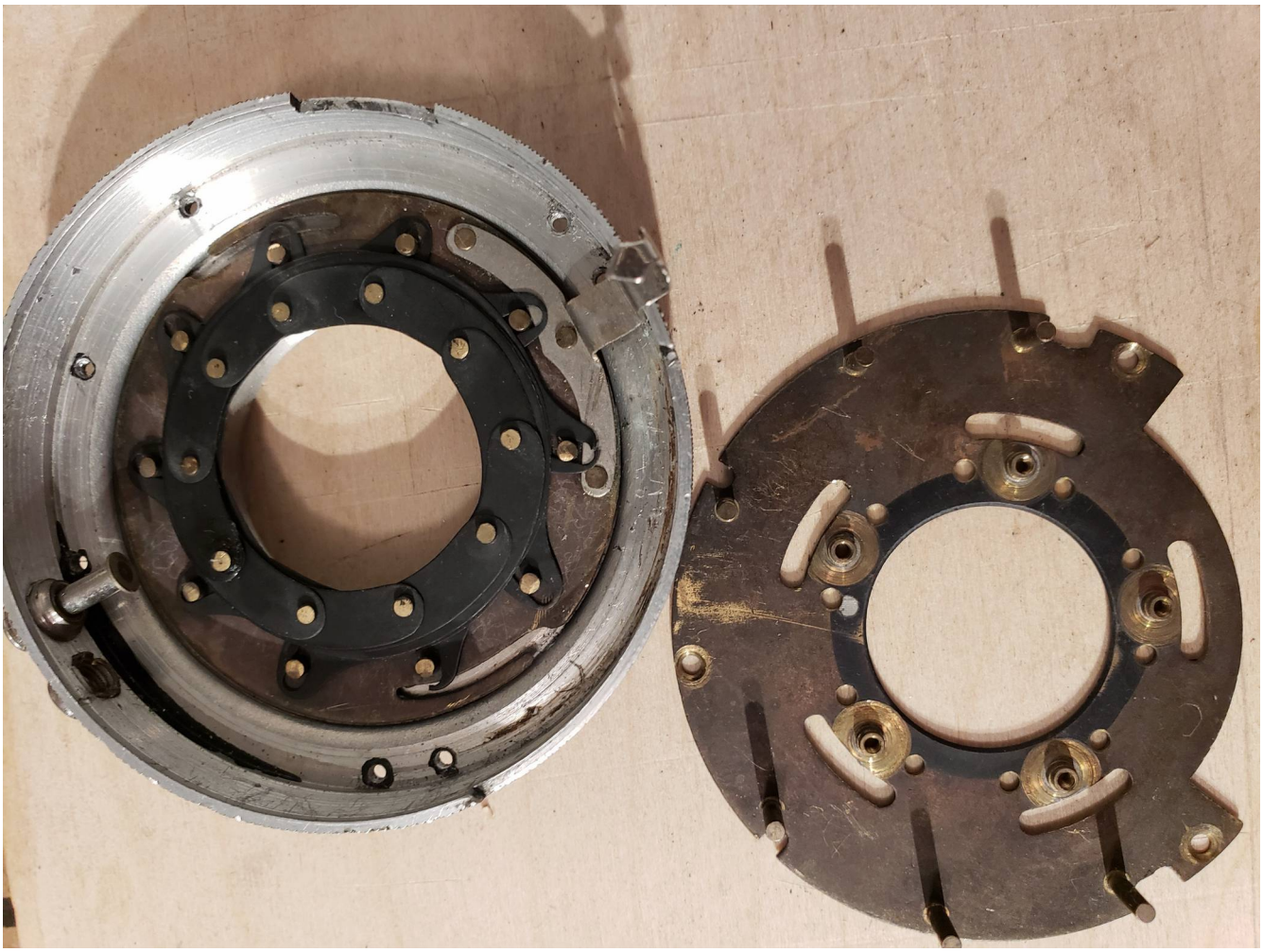


Step 18:
Now remove these 3 screws and then remove the base plate. Note how the brass ends of the diaphragm blades below line up against the openings in the base plate. This will be important during reassembly.



Step 19:

This is how a set of nicely assembled diaphragm blades looks like before the base plate is installed.



Step 20:

Here are all the diaphragm blades before reassembly. Some blades are damaged on the side with the opening, opposite of the end with the brass piece. Interestingly this doesn't seem to affect the operation. Before reassembling the diaphragm blades you need a round tube that fits in the inner circle – a socket is perfect for the job.

Step 21:

The first 6 diaphragm blades can easily be stacked in sequence on top of each other as shown. The next four blades are more tricky. The tube / socket needs to be placed in the middle to help keep the blades in place while carefully inserting the other four blades.

Step 22:

Inserting the remaining blades is a delicate job, but the shape of the blades for the Optimo shutter make it an easier job than for other shutters I have worked on. This would be much more difficult without the socket placed in the middle. Here you can also see the defect diaphragm blade where the little brass button had broken off. I fixed it with some cloth tape in the back of the hole and super glue. Obviously replacing the blade would have been ideal but that was not an option. Going forward this blade is going to be the archilles heel of the shutter, but so far it has been operating normally.

Step 23:

This picture shows the last blade being put in. Now you can go to step 19 and work backwards from there. It is best to keep the tube / socket in the middle until the base plate is put back to help keep the blades in place.