

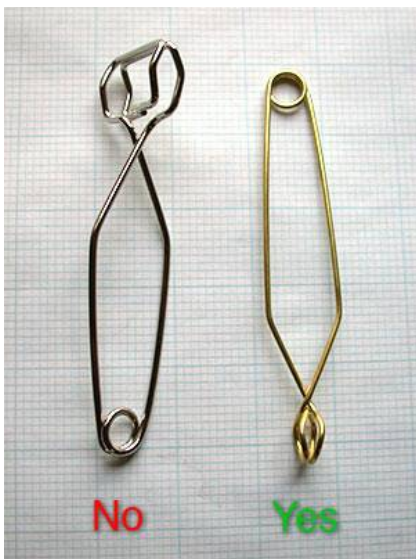
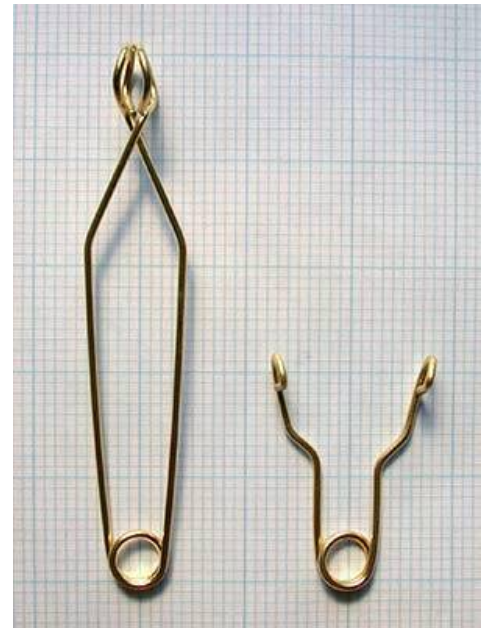
HOW TO MAKE BUCCAL PAD SEPARATORS BY MODIFYING A "MICRO" TEST TUBE CLAMP.

These instructions will show you how to make a pr. of buccal pad separators from an inexpensive test tube clamp. Buccal pad separators are used for examining guinea pig teeth and are a vital tool in cavy care.

You will find test tube clamps are produced by a number of different manufacturers. To tackle this project you will need a specific type of test tube clamp - a "micro" style clamp made of brass wire. The proper type may be found here (under "test tubes" page):

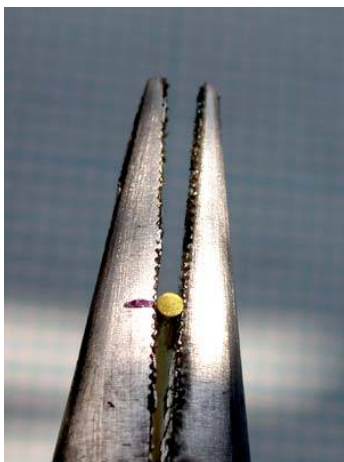
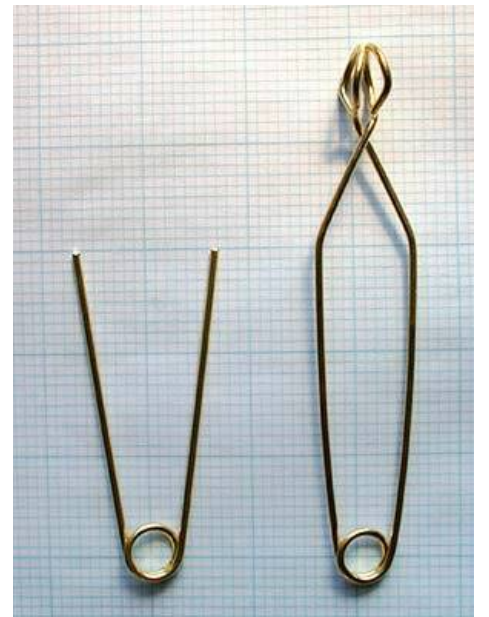
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Item Description: "Test tube clamp, Metal, Semi-micro - similar in design to the Stoddard type clamp (shown above), but made for extra-small test tubes such as 10 x 75 mm."



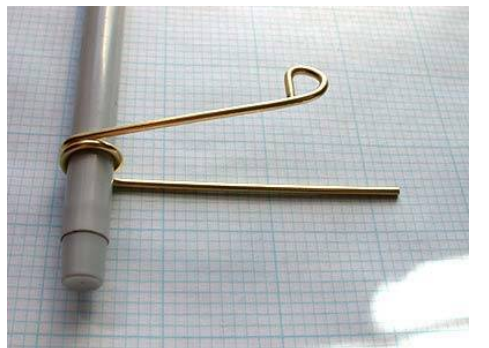
1) Note that "full-size" Stoddard test tube clamps (shown on the left) are typically made of steel and are far too thick/stout and powerful for this application (and impossible to bend). Some "full-size" clamps are brass plated steel so you cannot simply look for ones with a brass finish. Make sure you get the "micro" style clamp made of brass wire shown on the right. They have round (rather than square) ends.

2) Using wire cutters or diagonal snips, clip the ends off just before the arms bend inward as shown. Using 220 sandpaper, sand the clipped ends flat. It is very important to completely remove any burr as they will cause discomfort. Being brass, it took me only a minute (literally) to sand both sides perfectly flat.



3) Place a mark on the side of a pr. of needle nose pliers where the jaws are approximately 3/8" wide (measured on the flat gripping part). This mark will aid in getting both of the end loops the same size. Place the clipped end flush to the mark as shown. Then using the clamp itself for leverage, wrap (push) the wire tightly around one half of the jaws until it forms a D shape. This is far easier than trying to wrangle the wire at the ends using the pliers, and it reduces the potential to distort things in the process. I put tape on the needle nose jaws to reduce scratching.

4) It's a good idea to place something into the spring to keep it from distorting while doing ALL the bending (a thinline Sharpie as shown here, will fit snug). Just don't squeeze the clamp closed while you have this in place as that will alter the spring tension. Note that the D loop bend is made at a 90° angle to the spring loop.





5) Make sure the loop ends sit flush. Any sideways protrusions here will cause discomfort. The end gap should also be made as small as possible for similar reasons. The end gap is less of a concern if you intend to rubber coat the ends (see below) but the alignment here will be critical regardless. For best results to get the end gap snug, you can "overbend" the loop slightly past where it meets (as illustrated on the left) then align it to correctly sit flush (as shown on the right). You can also use regular pliers to squeeze the loop end closed to some degree, if you're careful. Just make sure the end does not protrude at all on either side when you're finished.

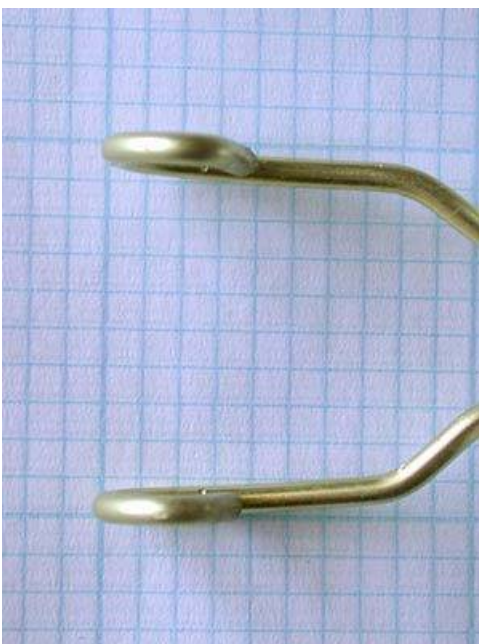


6) Make a mark on both clamp arms approximately 1 1/4" from the (spring loop) bottom. A guide mark will help keep things symmetrical. Place the widest part of the needle nose jaw to the outside of the mark and bend the arm outward as shown by twisting the pliers. To take a photo of the first bend I did both sides. However it will be easier if you make the second bend before removing the pliers from the first bend. Just push the remaining portion of the loop ends back inward. No need to be perfectly exact with everything yet as you'll spend couple minutes tweaking things once all the bends are complete

7) This is the basic shape as shown on 1/10 to the inch graph paper. Note: in use these clamps (separators) will be squeezed much closer together than the original test tube clamp design would be. As a result, if

you compare the photo of the original clamp (as clipped) in step 2 to the one here you'll notice the clamp arms (at the base) have become more or less parallel. This is normal and simply comes from flexing the clamp this tightly. As you flex the clamp this should soon become their natural "settled in" position.

8) In adjusting the angles, there are only two primary considerations:

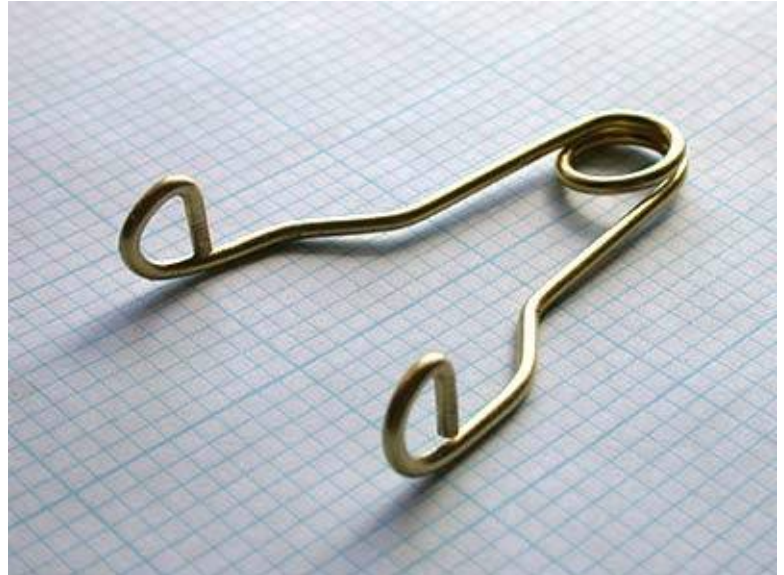


- a) the correct jaw opening size before the clamp is compressed = this should be approx. 1 1/2".
- b) the proper angle while compressed = this will have the looped ends parallel with each other when the jaws are compressed down to a 1" opening.



The photo to the left illustrates the separators being compressed down to 1" opening to check angle b. At 1" - these are pretty close to parallel. Keep adjusting the various angles until you've met both conditions a & b. Fortunately the brass wire is rather forgiving, so you can do much adjustment simply using your hands. Make sure you do not bend the spring loop as this alters tension, (keep whatever item you used in step 4 in place).

9) The finished clamp. My final dimensions were 2 1/4" long with a 1 3/8" jaw opening. This works perfect for my adult guinea pigs. Cavies vary in size of course but they shouldn't vary greatly. This is a good starting point for an adult guinea pig. Juvenile guinea pigs may have different requirements so you may need to adjust accordingly.



10) I recommend rubber coating the ends. Although this step could be considered optional, cavies aren't particularly fond of piggy dentistry in the first place so anything that adds comfort to the experience is good. I used a product called Plasti Dip (by Performix) which can be found at Lowes. You can also find it on eBay if you can't find it elsewhere. It's well worth doing for the price (a big can was \$7, small was \$4). I used Plasti Dip straight from the can but it can also be thinned with naphtha (i.e., lighter fluid) if desired. Out of the can it's thick, thick enough to fill in the loop ends when you first dip them. Just blow on the ends gently to "pop" open a hole in the loops. To keep the coating from sagging all in one direction, just turn the piece about for a minute or so. The coating starts to set up surprisingly quickly so you don't have to do this for very long. Don't forget to consider how/where you're going to set them to dry before you dip! After the recommended a half hour wait, I dipped them a second time. I placed mine near a heater to "cure" for a full 24 hrs. after the second coat. The rubber shrinks quite bit when completely cured. While the holes in the rubber coating may appear rather small they will in fact will easily slip over a guinea pigs teeth being as the surrounding area is somewhat flexible.

I hope this helps fellow guinea pig owners take care of their little guys.

Many thanks goes to the Guinea Lynx site, a wonderful online resource of cavy care info whose in depth insight on proper cavy teeth care provided the impetus for this effort, and who have offered support for this project and graciously hosted this how-to page.

Michael McCaughey
Lancaster, PA

