



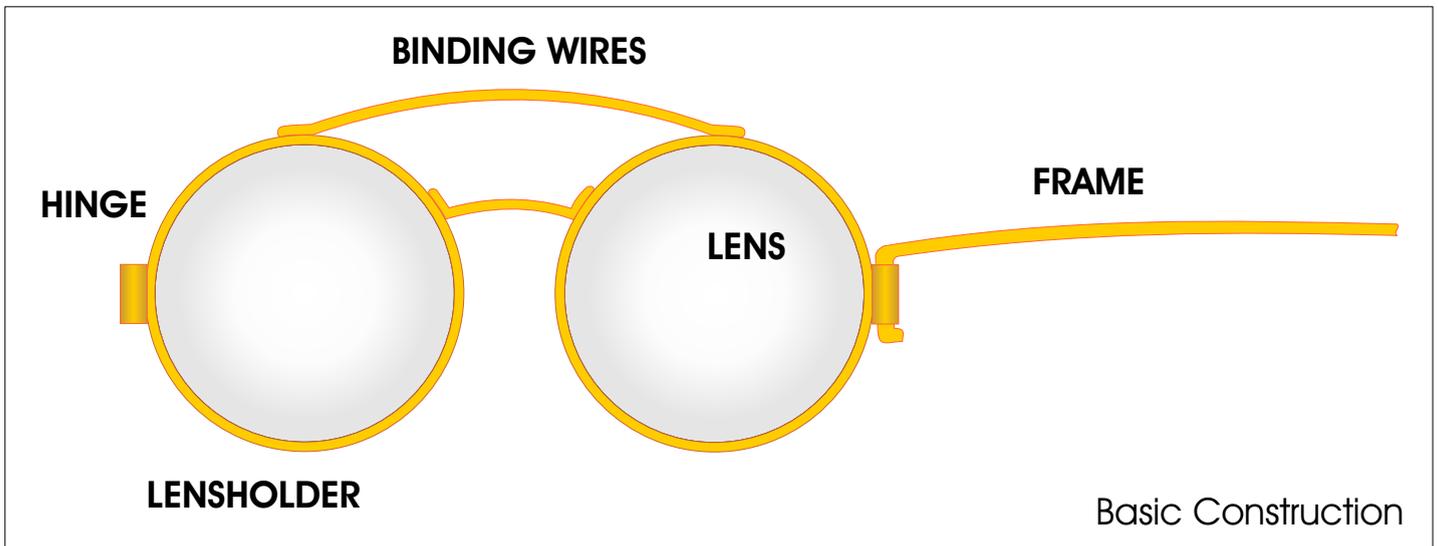
How to make medieval eyeglasses

Most users of eyeglasses - like me - have to change their glasses periodically, as the refractive error in eyes changes with aging. Here is an idea what to do with those old glasses.

If you have access to a lathe, basic welding equipment and a little piece of materials you can turn your spare pair into an historical glasses replica. Making the pair photographed in the right took me an evening's work.

Eyeglasses come into use in the 13th century. In Valenor, a fantasy world, people with money can easily buy a pair of glasses from opticians in bigger cities. Also, a skilled blacksmith can make the frame if the lenses are obtained somewhere.

Easier alternative is making a monocle, a one-eye eyeglass that really needs only a lens.



http://www.antiquespectacles.com/history/through_the_ages.htm
http://www.history-people.co.uk/html/history_of_glasses.html
<http://www.teagleoptometry.com/history.htm>



How to make medieval eyeglasses

Making lenses

We make the lenses by turning whatever-shaped modern plastic lenses to perfectly round shape and cutting holder grooves.

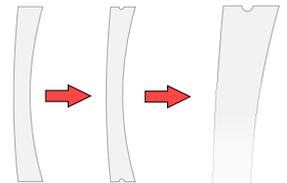
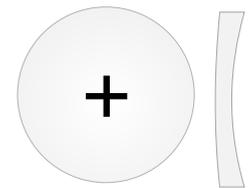
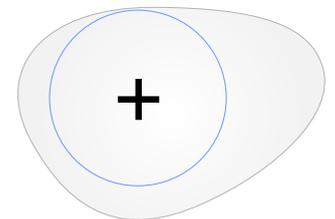
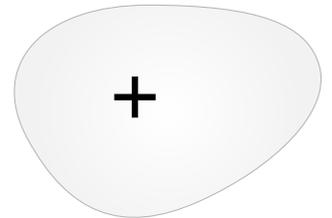
First, define the focal centre of your lenses. Good enough way is to find the thinnest or thickest point. Half-centimeter accuracy is ok, these are larp glasses, not Hubble mirrors. Mark the point with a removable marker.

Now calculate the lens size. Usually it's sensible to make as big lenses as possible, as the size of the modern lens is far from circle and limits the size anyway.

Now attach the lens to lathe - I used semi-hard rubber blocks - tight enough for work but not enough to break the lens or leave permanent scratch marks. This is the hardest part! With sharp blade (plastic bit is naturally best, but really any sharp bit goes) carefully cut the lens to your pre-defined size.

Then, cut the holder groove. Make it about half the diameter of your holder wire and semicircular in shape. Now you have the first lens. Do the another in same way.

NOTE: If you do not have access to a lathe, you can shape the lenses by hand. That takes more time, but with care the result is the same. You'd need a jig saw and a hand file.

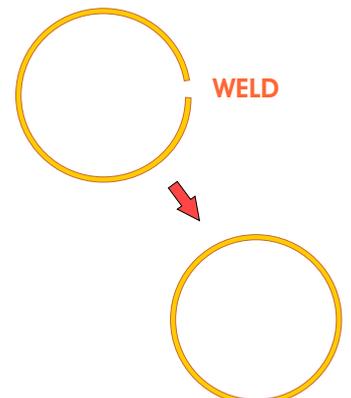


Making lens holders

Calculate the diameter of your lenses (the lens, not the groove). Decrease the measure by one millimeter to make the holder fit tight to the groove, but still big enough to slide over the lens.

Cut pieces from brass or bronze wire. Carefully bend the wire to circular shape. Weld it together. Make the another similarly.

Now you can try the holder to the lens. If you cannot slide the holder into the groove with moderate force, cut the weld and weld the piece again, adding half a millimeter space. Try it again... at some point the holder fits firmly. Take the lenses out of the holders.

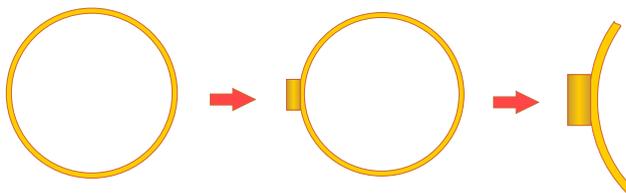
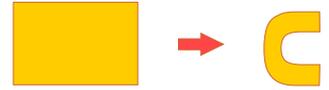




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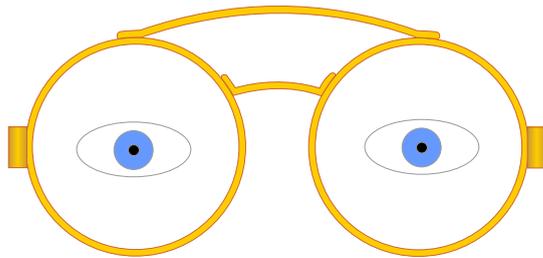
Making hinges

Cut a rectangular piece from bronze or brass sheet (anything from 0.3 to 1mm is ok). The size depends of your lens size, but a rectangle about 7x10mm is good. Fold the piece to a U-shape. Make another. Weld the hinges to the lens holders.



Joining holders

Measure the distance between your eyes. Cut appropriate lengths of wire for the binding wires. You can shape them any form you desire. Weld the wires to the lens holders. The structure will distort during heating - just bend it to the right shape afterwards.



NOTES

It's better to use high melting point solder (bronze) when making the glasses. If you don't have a gas torch, normal soldering iron with low melting point solder (tin) can be used, but the metal parts will not be as strong.

*

You can get the materials from most good hardware stores or weld shops. Normal welding wire is very good for the frame, and you can get it on many diameters. I used 1.5mm on my glasses, but they are a little flimsy. Very light, however.

If you have nickel allergy, check the alloy of the wire you are using.

*

If you have error of refraction called "cylinder correction" remember to mark the angle (upside up, downside down) the lenses are in your modern frames! It's hard to angle right otherwise.

Making frames and fitting lenses

Estimate the length from the hinge to your ear (taking the shape from your modern glasses is a good idea). Cut the wires and bend them to right shape. Fit the frame wires to the hinges and bend the hinge end to secure it to the frame.

Attach the lenses as before, sliding them into the lens holders. Clean the (at this point) very dirty lenses and try on your new medieval eyeglasses. Congratulations!

