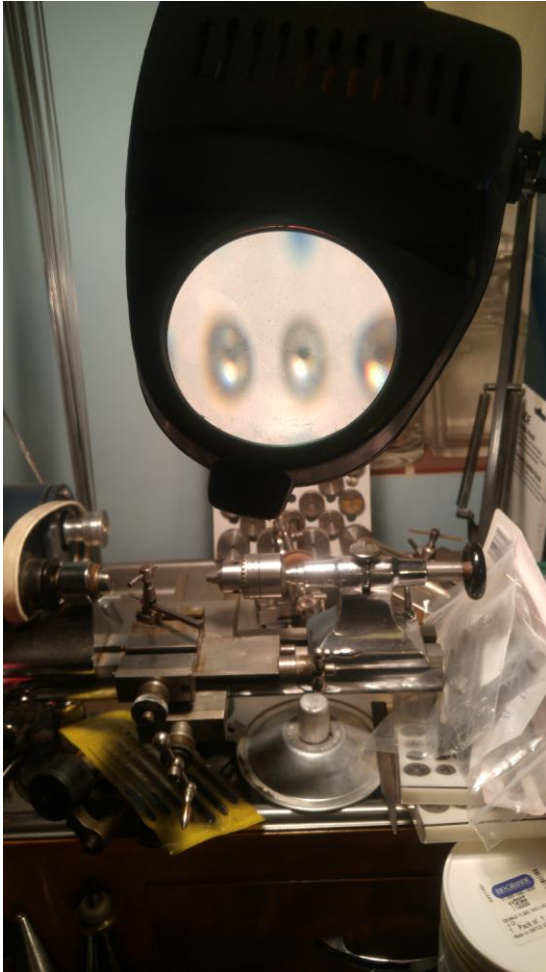


Magnification Options for the Watchmakers' Lathe

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As I age, I find it getting more difficult to see the small objects that I often machine. Therefore, I use a variety of magnification aids to help the situation.



The first magnifiers that I used with my WW lathes were mounted magnifying lenses complete with built in light bulbs. I still use two of these – one on a WW lathe and the other on my small CNC milling machine.

They both do the desired job just fine.



The above two magnifying lamps have been in use for decades – long before LEDs became readily available.

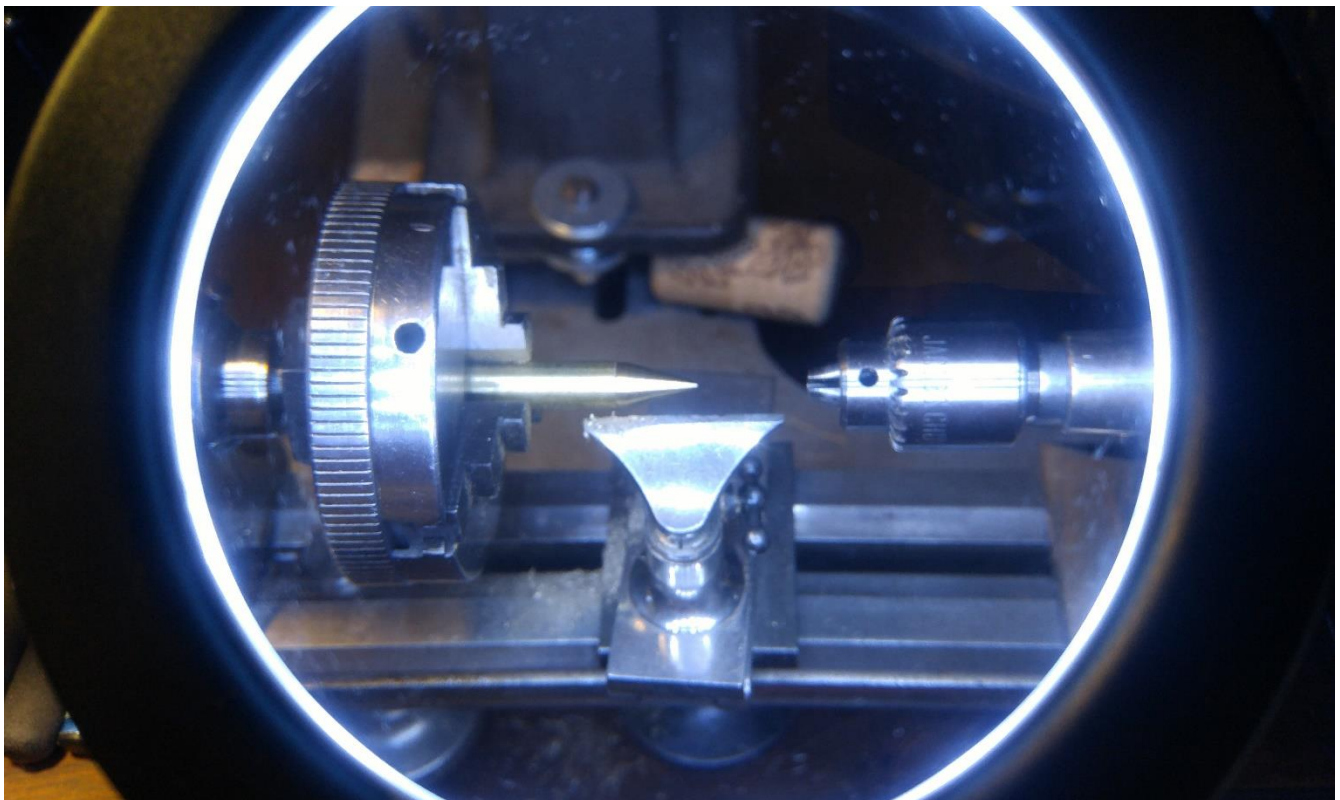


As time went on, I added two types of LED magnifiers to the list. The smallest features a ring of LEDs around the lens.

It also boasts a strong magnetic base. I attach it to a movable thick steel ring for easy positioning anywhere on the work bench.



This gives a nice view of the work area.



For my larger lathes and certain work on the WW lathes I utilize a larger floor stand LED illuminator/magnifier. This larger illuminator has a flip open lens cover and many more LEDs for a very bright light through a much larger lens.



Not every tiny job can be handled by these magnifiers.



When I require a little more flexibility in my viewing, I utilize a custom made pair of loupes. These are fitted to my lens prescription and eye measurements.

For the ultimate in magnifying and viewing I use my B&L stereo zoom microscope.

As long as I use the 10x eyepieces, objects stay in focus when zooming.

If I switch to one of the more powerful eyepiece lens sets, I will need to refocus after zooming.



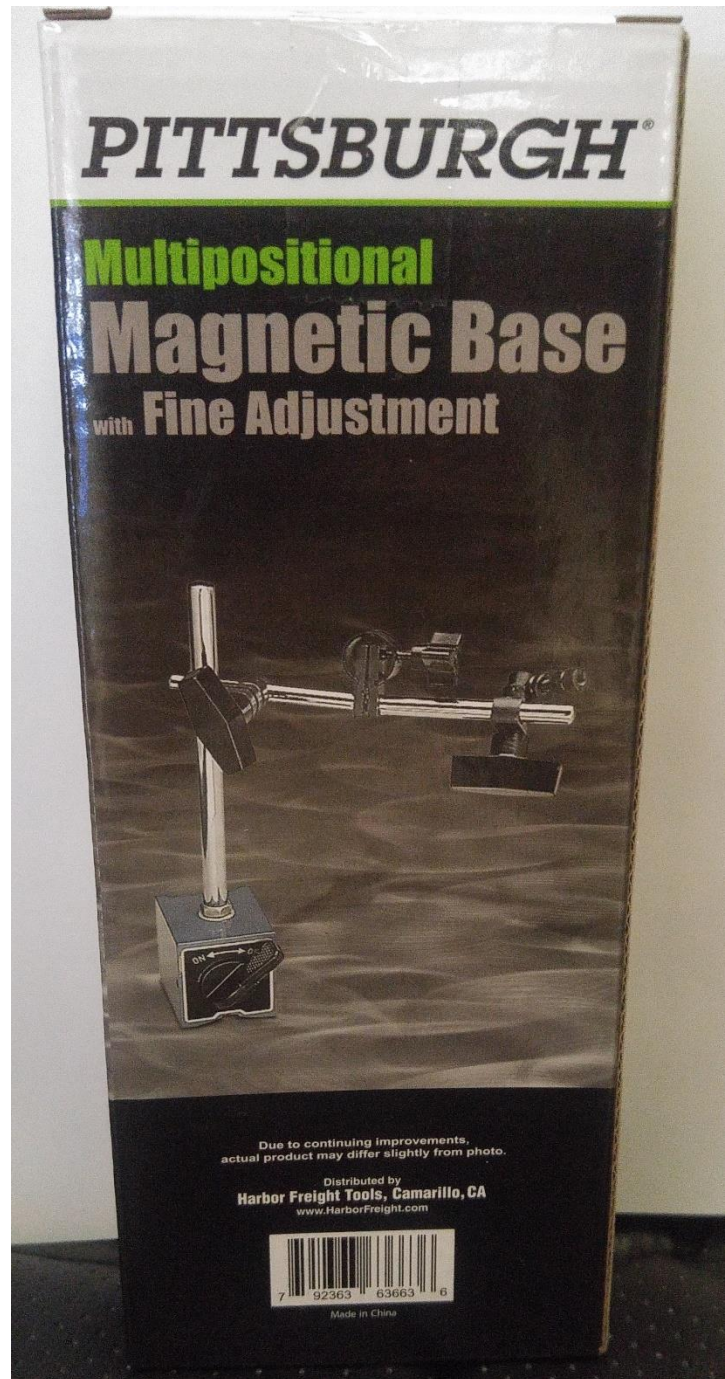
The working distance is 4" from the added lens and the ring LED light is adjustable in intensity.



Lately I have been experimenting with an inexpensive digital microscope that works through my smart phone, tablet, and PC.



This is the digital Microscope that I am using for demonstrations and for making videos.



I modified the indicator base shown at the right to solidly support the microscope while recording. It gets attached to one of the heavy steel rings shown above for easy positioning.

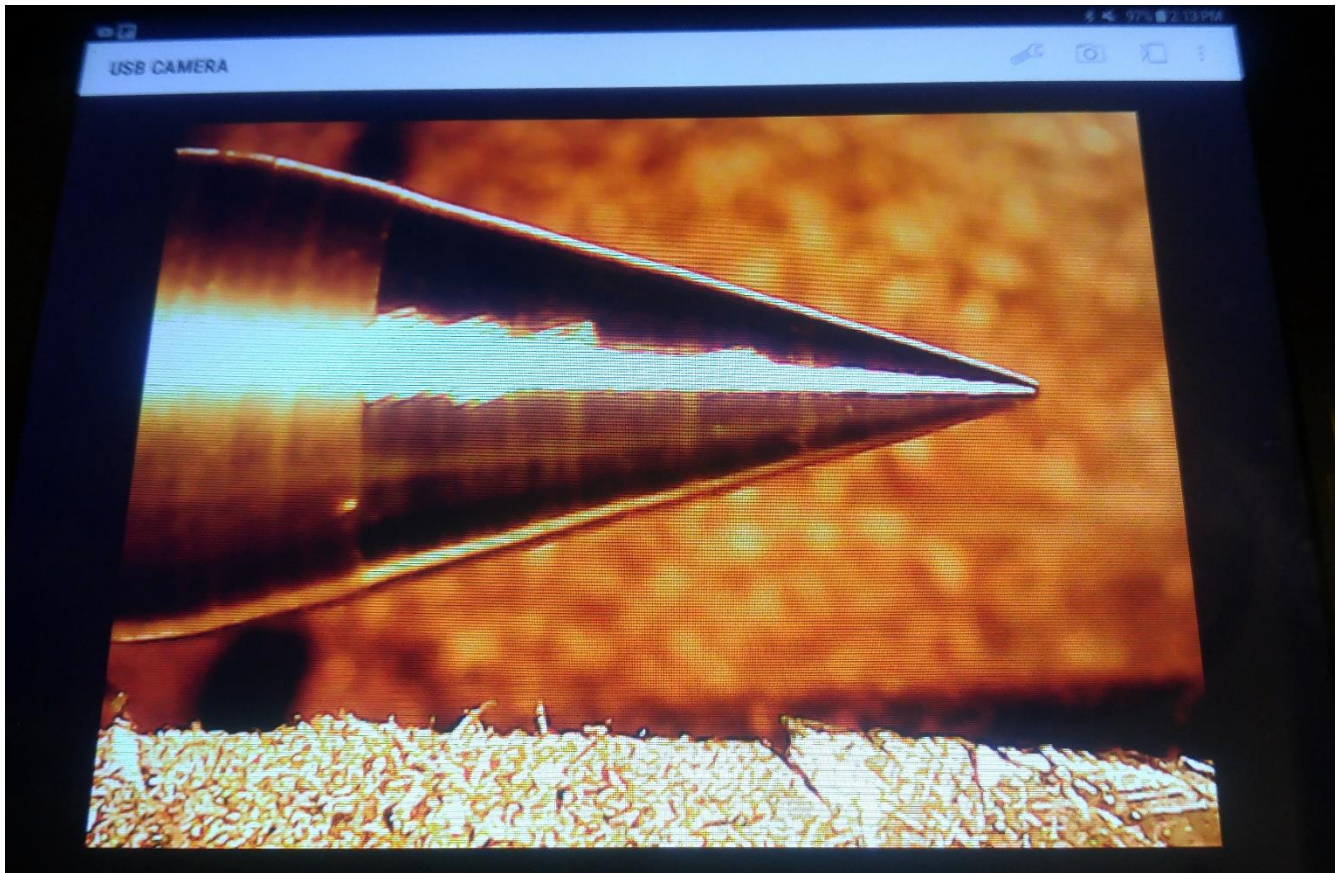


Shown above and below is the microscope suspended above the working area of the WW lathe.



The magnetic mount clamped to the heavy steel ring may clearly be seen.

My tablet serves as the viewing monitor.



This combination of various magnifying systems allows me to still see what I am doing. For a couple video examples of freehand machining of metal go to:

First video with digital microscope...

https://www.youtube.com/watch?v=umj0TUk_euo

Second video with digital microscope...

<https://www.youtube.com/watch?v=l5BQNRgQTXw>