Scratch Built: Adjustable Lubricators

BY
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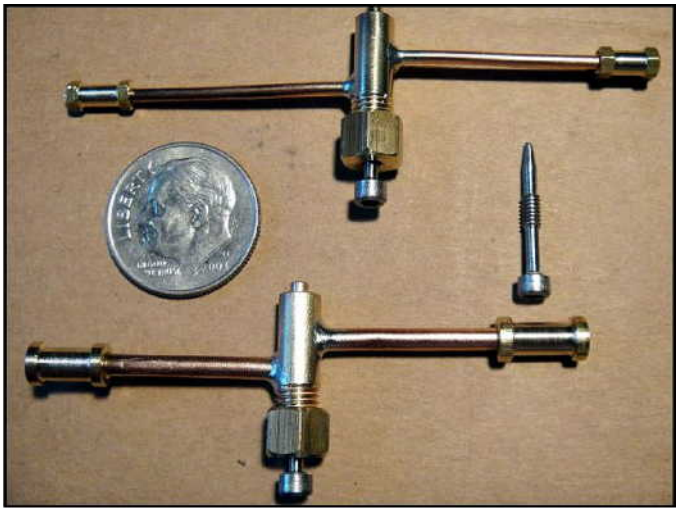
(Live Steam/Topic: Adjustable Lubricators)

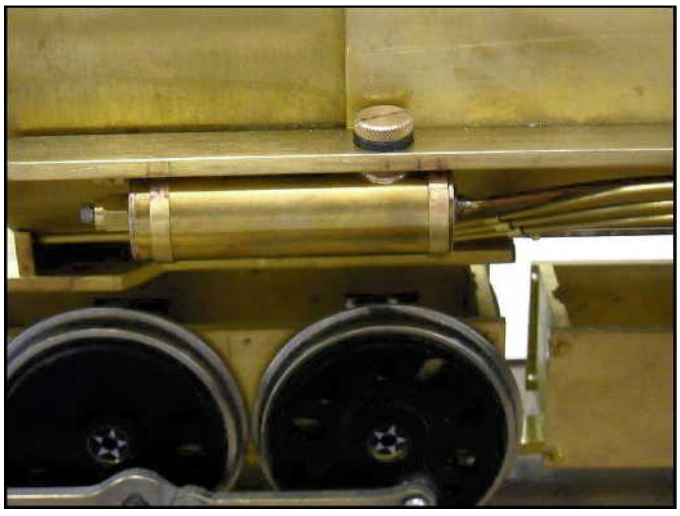
As a follow-up to another thread, I thought I would share some things my friend Dennis Mead and I have learned about cylinder lubrication.

The Garratt was my first project and we researched as much as we could on the subject of dead leg lubricators. We wanted the dead leg type because both cylinders were superheated. Because the super heater tubes can get red hot before the steam is applied to them, we were afraid that the oil could cake up in the tubes and eventually restrict the steam flow.

Some of the research said that the dead leg lubricators don't get enough lube to the cylinders but we couldn't find any specs on the tube size or orifice drill size. Our first pass, we drilled a #60 (.040") hole and gave it a try. It emptied the lube tank in one trip around the track. Henner then said that Accucraft uses a .020" hole in their pass through lubricators but we weren't sure how that would work on a dead leg. I wanted to then make up an in line adjustment valve we could just tie into the existing plumbing. Here is what we came up with.

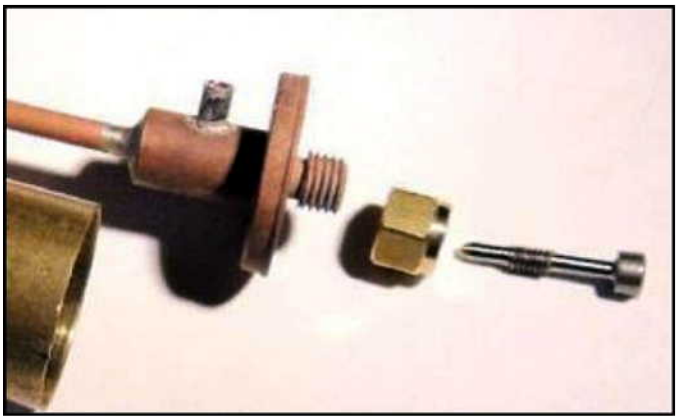


The valve body is 1/4" round stock and the valve is made from a #2-56 SS socket head screw it is adjustable with a long Allen wrench from the side of the train when it is on the track. This is the only good shot I have of this but the valve below is made the same way.



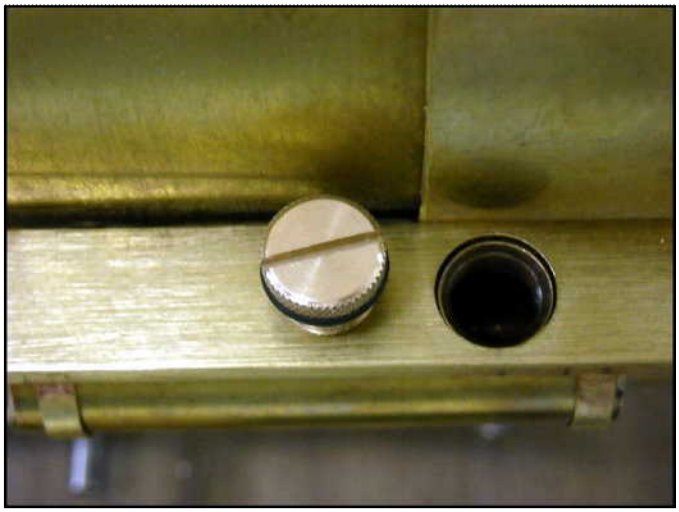
This is the lube tank for the Quad I am building the valve is on the left side.

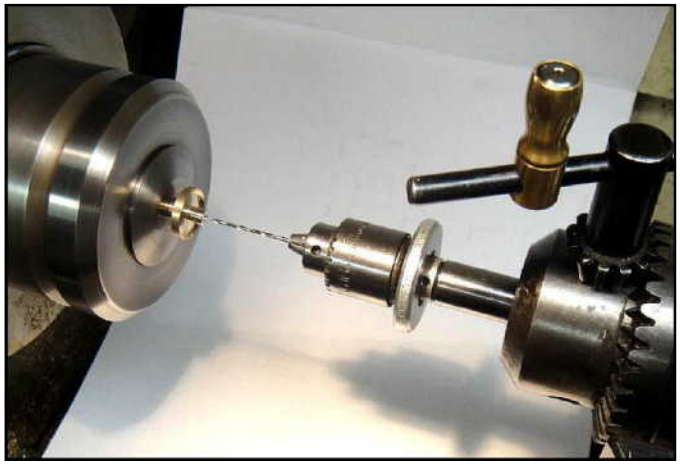
In this photo, you can see the valve on the right the feed tube comes in from the left and takes a right angle up to make the pickup just below the top of the tank. A #2-56 screw is used for the needle valve, which seals to a .040" hole drilled through the valve body.



Here is a close up.

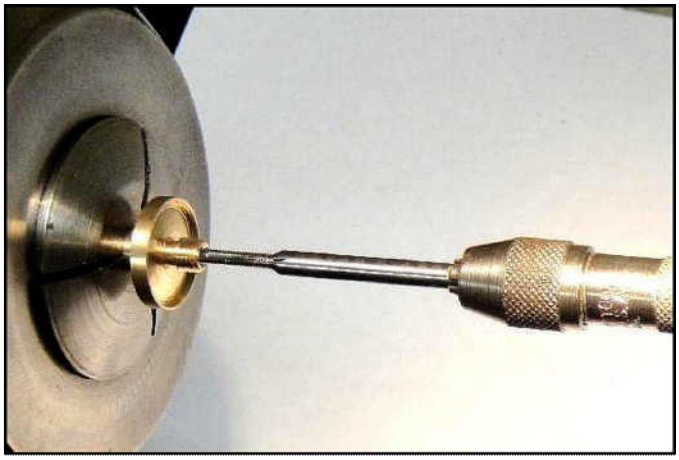
This running board is 1/2" wide and I wanted the fill hole to be large enough to be able to fill it without spilling anything. Thus the very thin wall on the outside.

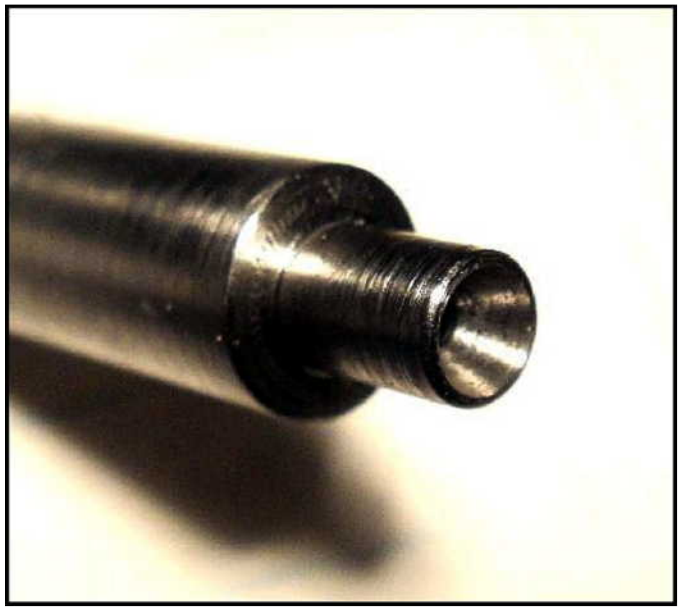




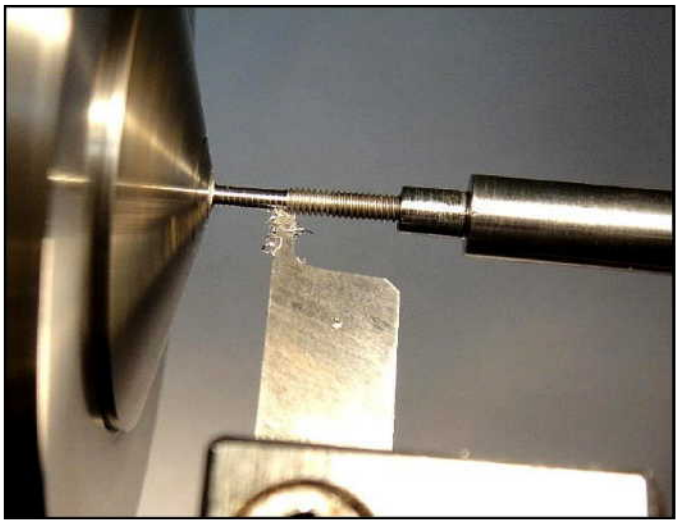
Here the end cap is being drilled out for the #2-56 thread. This hole only goes 3/4 of the way through and then there is a smaller hole, which goes through. The combination of the two holes creates the valve seat.

Tapping the hole in the lathe.

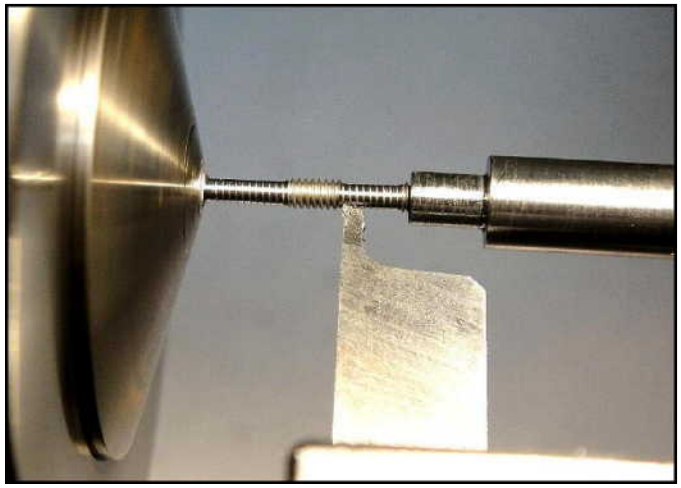




Here is the stabilizing tool Dennis made out of oil hardened drill rod. The tapered hole is made with a #00 centering drill.

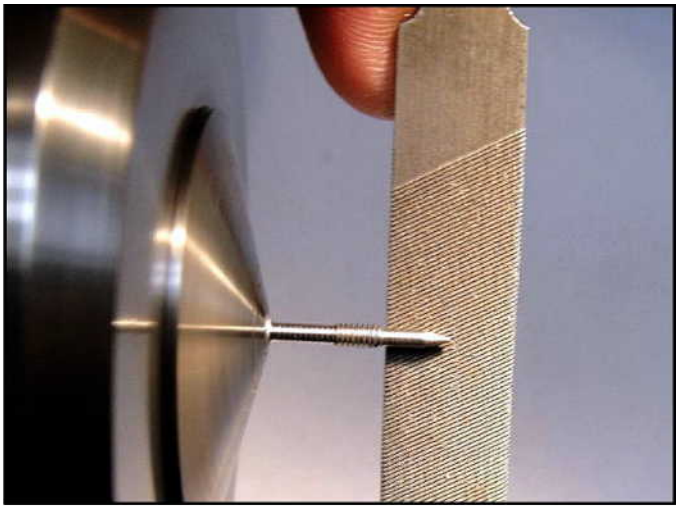


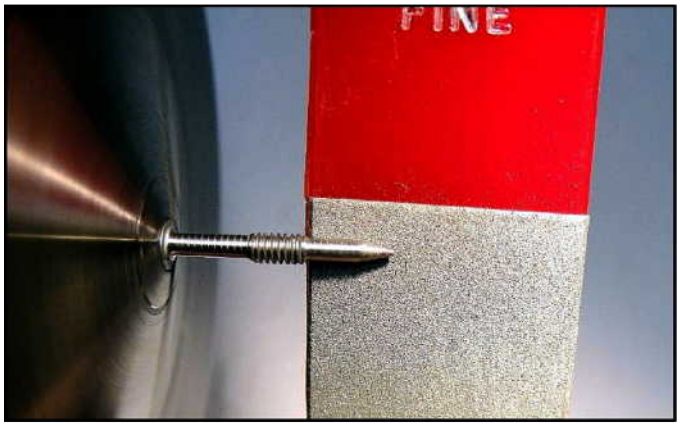
The tool is chucked up in the tailstock and the socket head of the screw is chucked up in the headstock or as seen here placed in a collet.



The lathe cutting tool needs to be ground down for a very small cutting area and the threads are removed with cuts of no more than .005" at a time. The threads are removed for the o-ring seal at the top and to allow flow at the bottom.

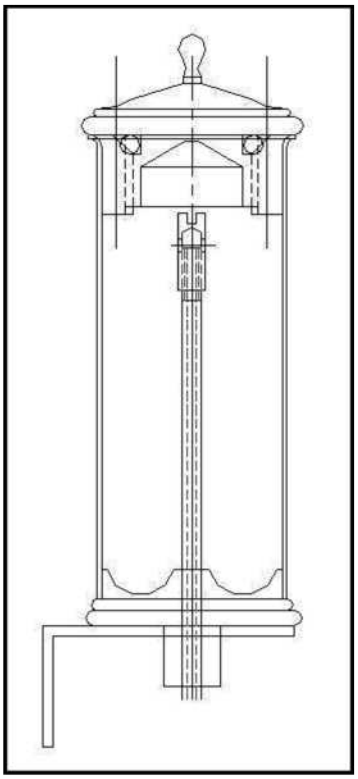
The stabilizing tool is removed and the needlepoint is formed with a file.

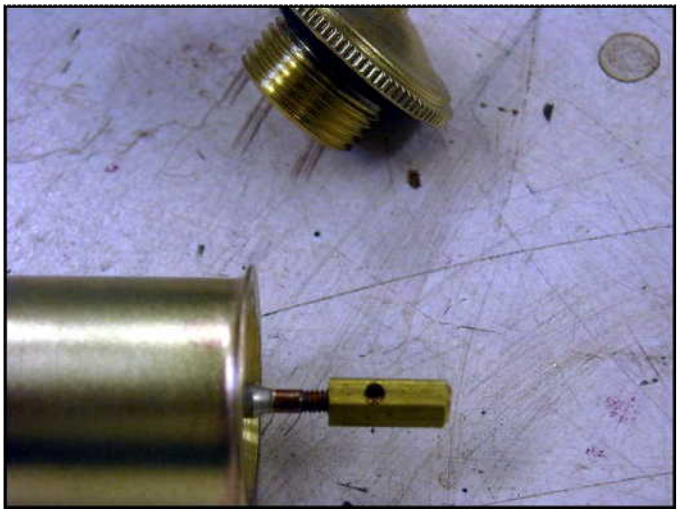




A fine diamond board is then used to remove the file marks.

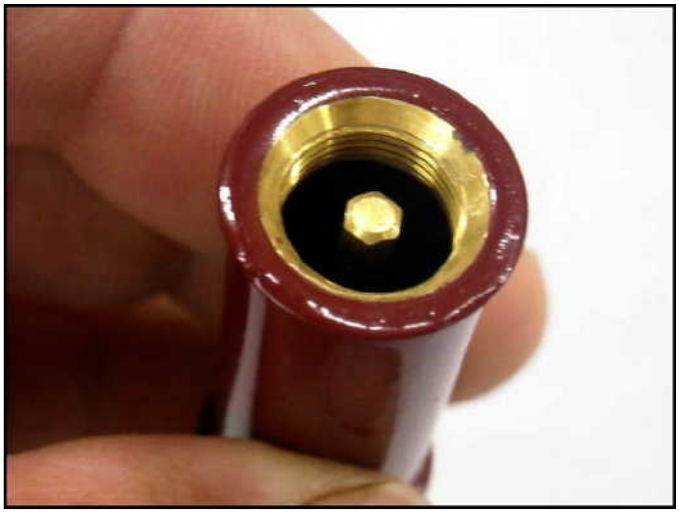
Here is another design we came up with for a vertical lubricator.

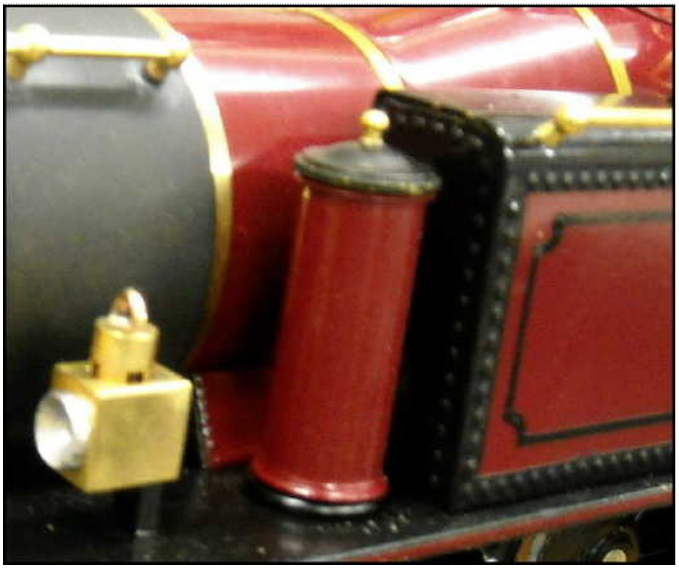




A 1/16" OD tube is threaded to #2-56. A piece of 1/8" hex is then drilled partially through and tapped out. A horizontal 1/16" hole is drilled just below the bottom of the vertical hole. By turning the hex, you limit the oil flow. Once the right adjustment is determined by running, the hex is sealed with thread lock.

The adjustment is made with a 2/56" socket tool.





Here it is disguised as a sand tank.