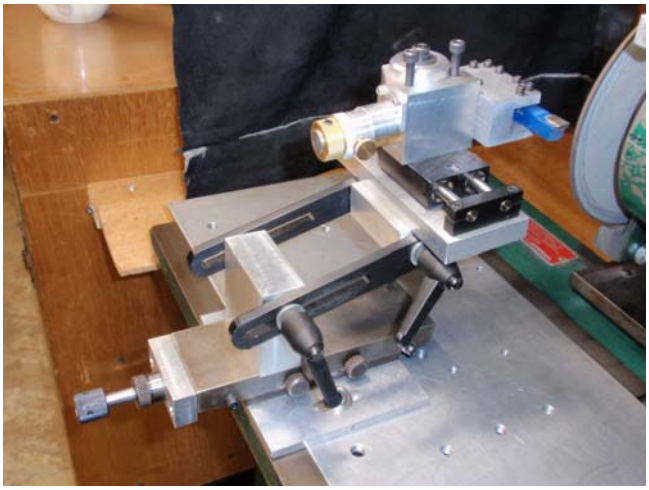
FOLEY TOOL GRINDER

- Made a leather containment curtain from a flea market purchased $3 leather coat. It can be retracted and folded out of the way. Dust stays within the contained area and shop vac / small axial fan can be used for a down draft air pull.

The grinder can be rotated 180 deg and provides for small feed adjustment.
The Al mounting plate allows for parallel movement to grinder axis for initial setup of any jig. Keeping components of the jig and the mounting plate square , etc provides for easy alignment of things. When using diamond wheels you only take .001" or less but never more than .002" material removal pass.

JIG FOR LATHE TOOLS



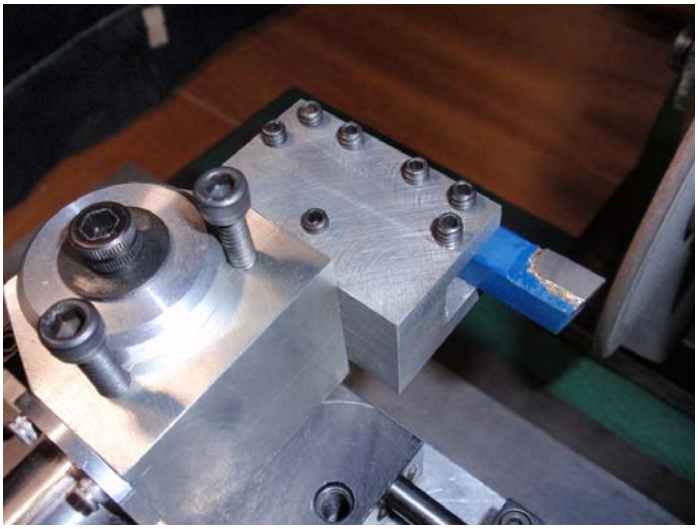
Multi-purpose jig made for sharpening carbide inserts and tools and truing up a wheel. You need to be able to set the tool height at the proper relief angle and relation to the grinding wheel and also allow for depth of cut. Slide is used for moving tool along the wheel face or side.

The top tool holder shown allows positioning 1/8 to 1/2” tools parallel and 30 degrees to the grinding wheel. It can also rotate. The head can be rotated and indexed about it’s axis and an internal spring keeps the back of the head from moving away from the vertical mount (keeps dust from getting into that surface). Probably won’t rotate much but one can use it for doing the top face of the tool. Usually you grind the top, then the front side, and then the back side of the tool.

The jig is rather easy to setup and use. The small magnetic digital angle indicator negates having scales and is quite accurate ($25 Harbor Freight or the bigger cheaper version).

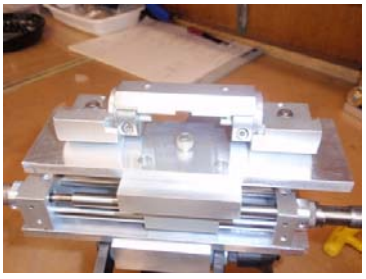
Initially I use a gauge to set the top mounting block and then just rotate the slide up for a tool edge relief of 5 degrees and which places the tool edge very close to where it should be in relation to the grinding wheel. (could always just rotate the grinder but this easier)
The formula for tool cutting edge distance above grinder center line is:
D= Relief Angle x grinder wheel diameter x .0087
Ie; For a 5 degree relief, 6” dia wheel…..D=5x6x.0087=0.261”
Small changes in jig horizontal distance from grinding wheel only has the affect of a fraction of a degree on the relief.

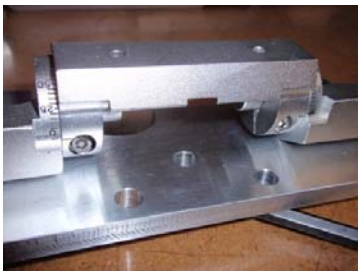
I had to modify the small cross slide making a 40 TPI screw along with hidden double bearings to give it a nice feel. The jig is rigid and does maintain accurate lockup. Below is a close up of the tool holder.



A few different slides were made.
This one has two micrometers for positioning, restricting movement of the slide.
Sleeves can be installed on the mic anvils allowing for adjustment over complete slide movement. The slide just mounts to the jig top plate.

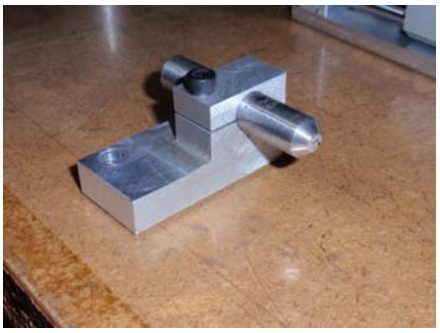
I made up a vertical rotating fixture that can be mounted onto any of the slides.
It is shown below.





WHEEL TRUING

A diamond is used for dressing and truing of the grinder wheel. Note that the point is never used directly into the wheel but rather below the wheel center and on a downward angle to wheel rotation. (If the diamond point breaks you can ruin the wheel!)

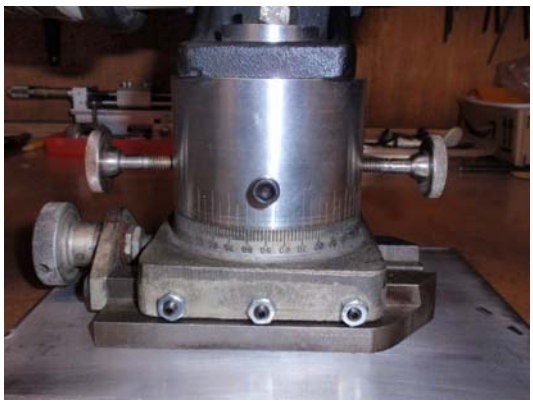


GRINDING THE INSERT OR TOOL

Diamond wheels should be used for carbide, CBN for cobalt, don't mix the two. Grinding steel with a diamond wheel can glaze it and will be a PITA to even dress. So minimize the steel portion by back grinding it away which is shown below and don't get the steel to hot as you can create cracks in the carbide. I had a bunch of these 3/8" tools, didn't cut worth a darn, they do now!

Grinding inserts provide for refinishing chipped or dulled inserts.
The one on the left are be used on the small lathe. On the right is a regrind of the left face and a back rake added to the top.

Also found a die grinder I had so cleaned up a base I had and made a mount for it. Can use the base for other hand held stuff just need adapter rings.

Now I have done vibration analysis at work and know that destructive loads will occur if something goes into resonance. This is what happens when you don't check run out and balance.

So as I look thru the "stuff" I have some options. One is a modified R5 index which allows for 36 equal positions or by degree. The other was made a long time ago, is much smaller and has collets.

END MILL HOLDER

Can be used for end mills with ¼, 3/8, ½" shanks.
I modified the one shown above to make it mountable and smaller. The collet holder was a radial arm saw adapter to use router bits. It's mounted symmetrically into a machined pillow block. Adapter added to allow indexing in 10 deg increments, back side is just a fancy nut to lock index along with pin in place. It can be mounted onto a vertical indexed adapter.

SMALL MOTOR

Small HP motor from a jig saw. It's 1750 (which seems to be just right) rpm and using a motor control can vary the speed. Motor is totally enclosed and has no shaft play. Made an adapter for holding the cheap Harbor freight diamond wheels. Blade runs true, motor is quite and it's mounted on the jack stand to provide height adjustment. You do not cut off with these blades but use the one of the sides. You can use the blade for carbide, HSS, Cobalt, they are course grit but I get fast material removal and min dust when used.
Best of all they are cheap and long lasting.

So drilled a few more holes into a plate I had, mounted the motor and tested the end mill jig. There is slight vertical play in the slide only, the jig is very rigid, have some flex in the jack stand but it actually assists in the sharpening. Foot print as shown is 10” wide x 18” long”
X 8” high.

Just one of the carbide end mills rough finished. Removed about 1/8” from the end, Then put the reliefs on both sides. Only need to finish the cutting edge face in the Darex. Quick setup, fast roughing, and quite accurately done!

Just some ideas on what to do with that stuff you collected over the years.

RICH