

<http://www.portlandmodelengineers.org>

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FOR THE BEGINNER # 27 by Wes Ramsey
Cemented Carbide Grades

There are two main groups of cemented carbides. The first are straight carbide grades composed of tungsten carbide and cobalt binder. These are used for cast iron, nonferrous metals, and nonmetallics where resistance to edge wear is the primary factor. A second group, composed of tungsten carbide, titanium carbide, and tantalum carbide plus cobalt binder, are usually used for machining steels where resistance to cratering and deformation is the major requirement. Cemented carbides have been organized into grades. Properties that determine grade include hardness, toughness, and resistance to chip welding or cratering. The properties of carbide tools may be varied by the percentage of cobalt and titanium or tantalum carbides.

Increasing the cobalt content increases toughness but decreases hardness. Properties may also be varied during the processing by the grain size of carbides, density, and other modifications. Some tungsten carbide inserts are given a titanium carbide coating to resist cratering and edge breakdown. Tantalum carbide is added to sintered carbide principally to improve hot hardness characteristics. This increases the composition's resistance to deformation at the cutting temperatures.

- Carbide grades have been organized as to their use.
- C-1 Roughing cast iron and nonferrous metals.
 - C-2 General purpose cast iron and nonferrous.
 - C-3 Light finishing, cast iron and nonferrous
 - C-4 Precision boring, cast iron and nonferrous metals.
 - C-5 Roughing cuts, steel.
 - C-6 General Purpose, steel.
 - C-7 Finishing cuts, steel.
 - C-8 Precision boring , steel.

Update From March Meeting

Last month's meeting was held at Grant Carson's shop. Its central location is ideal for members to converge on from all over the Portland area and beyond. The following pages contain a sampling of the items that were brought in to enjoy and discuss.

Grant will also be hosting the next meeting, Saturday, April 8th, at 1:00pm. Directions and a map are provided on the next page. Our standing request is that you bring a project to show -- work-in-progress or complete. That's what makes meeting so interesting.

Short Tutorial

Our first tutorial session will be held prior to the regular meeting at 12:00pm. Wes Ramsey will be demonstrating some of the techniques he uses for electrolytic rust-removal. If you are interested, bring a sack lunch and learn some new tricks.

Tailgate Swap Meet Announcement

This is an early reminder to start sorting through all the junk, er...treasures that have been taking up space in your shop. Bring them to the June 10th meeting and take home some new stuff.

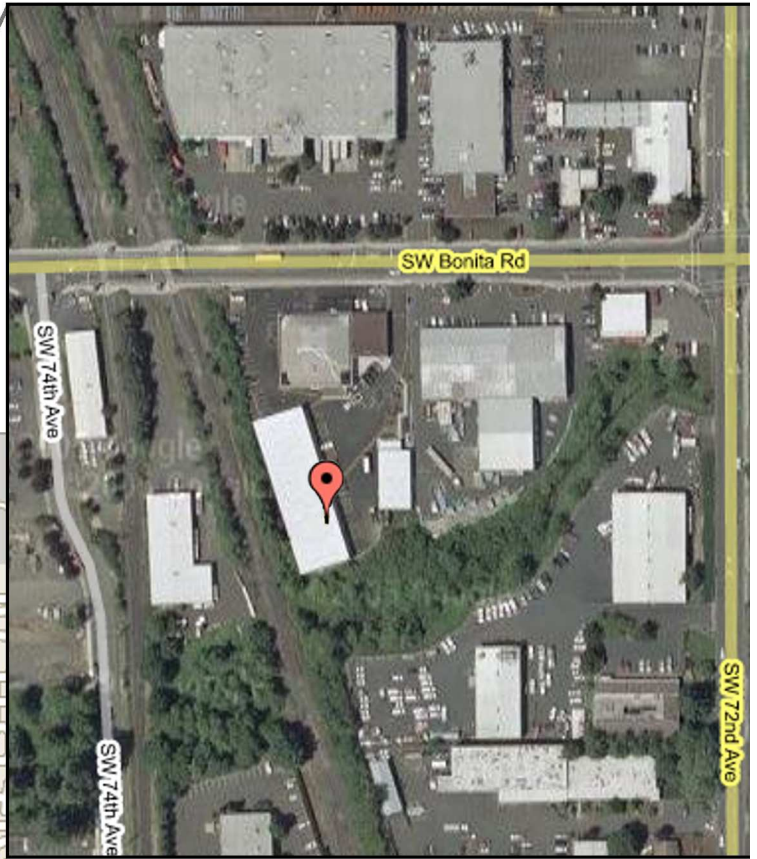
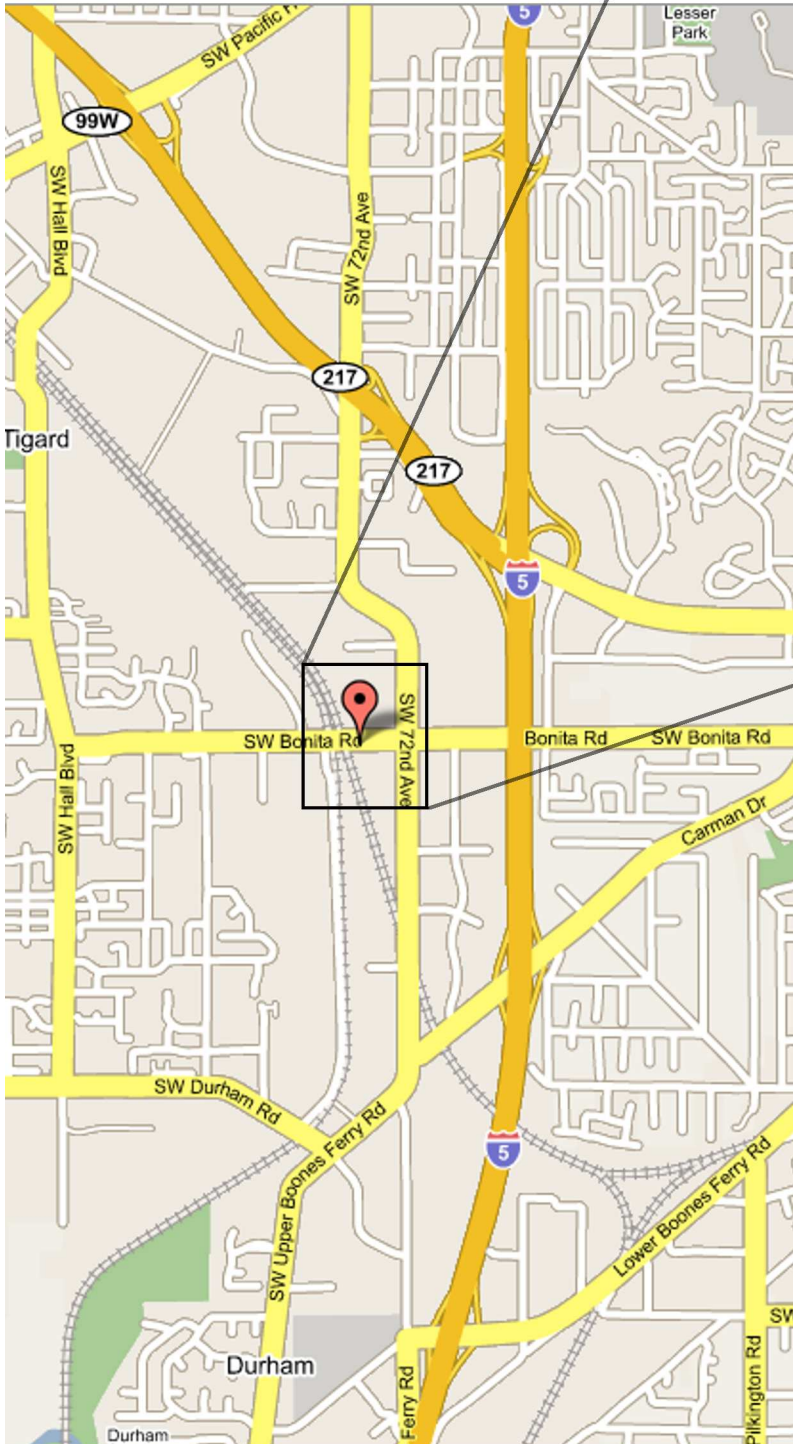
So, with the announcements out of the way... on to some pictures! To the right is a continuation of Bob Eaton's project featured in the February issue of the newsletter. He has added a trailer to the collection!



A & G PRODUCTS

Saturday, April 8th, 2006
Tutorial, 12:00pm
Meeting, 1:00pm

A & G Products
7360 SW Bonita Road, Unit C
Tigard, OR 97224



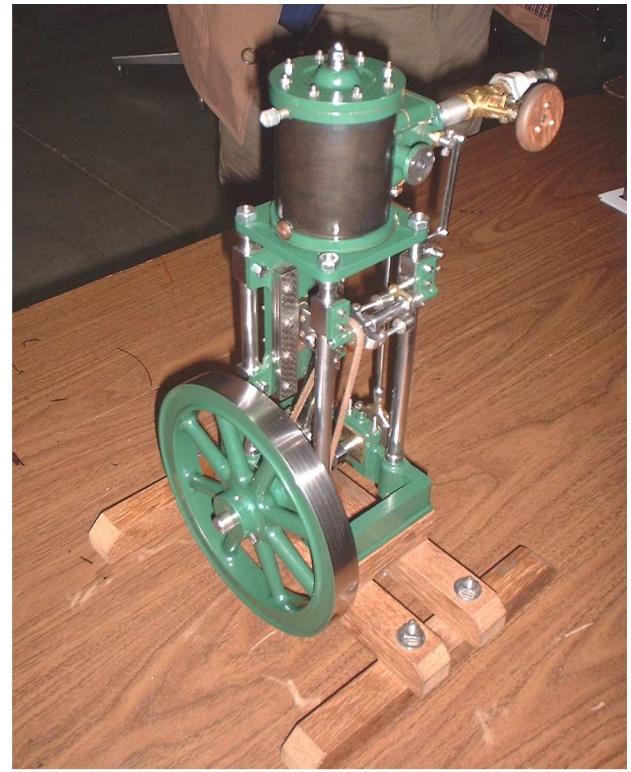
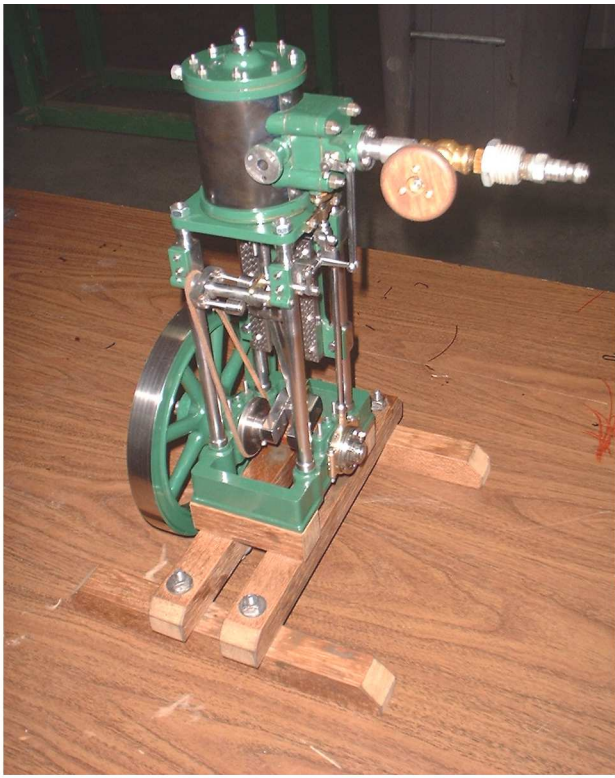
Directions to Grant's

From I-5:

Use exit 292 to Hwy 217, go north about 1/4 mile toward Beaverton to SW 72nd exit. Turn left onto SW 72nd Ave, go about 3/4 mile to Bonita Road, turn right. A & G will be on your left.

From Hwy 99 (Pacific Ave):

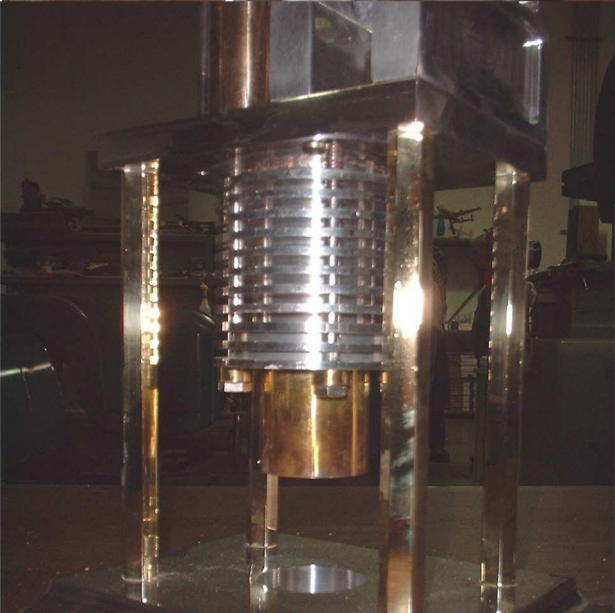
Turn south onto SW 72nd Ave, proceed about 1-1/2 miles to Bonita Road, turn right. A & G will be on your left.

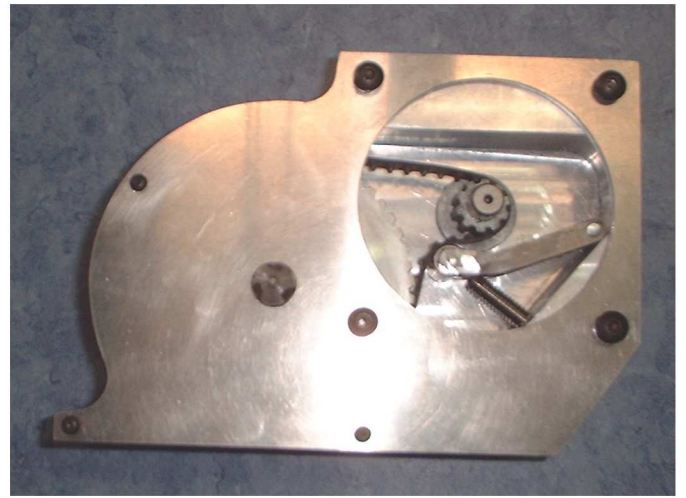
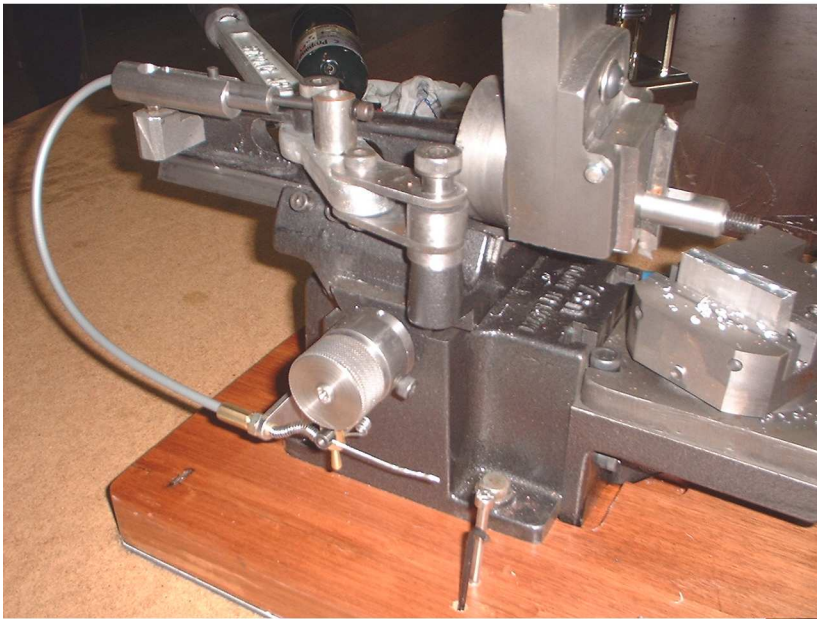


This month two model engines were displayed:

The one above, by Mel Farrington, is a single cylinder steam engine developed from the second Lindsay book by Haslick.

Below is another Sterling engine demonstrated by Terry Coss. It developed close to 2700rpm during initial testing.





Above, Jim Pfaltzgraff explained a novel pawl and bike cable mechanism he developed to advance the feed on his hand shaper. This has the benefit of being simple to construct and should stand up well to wear over time.

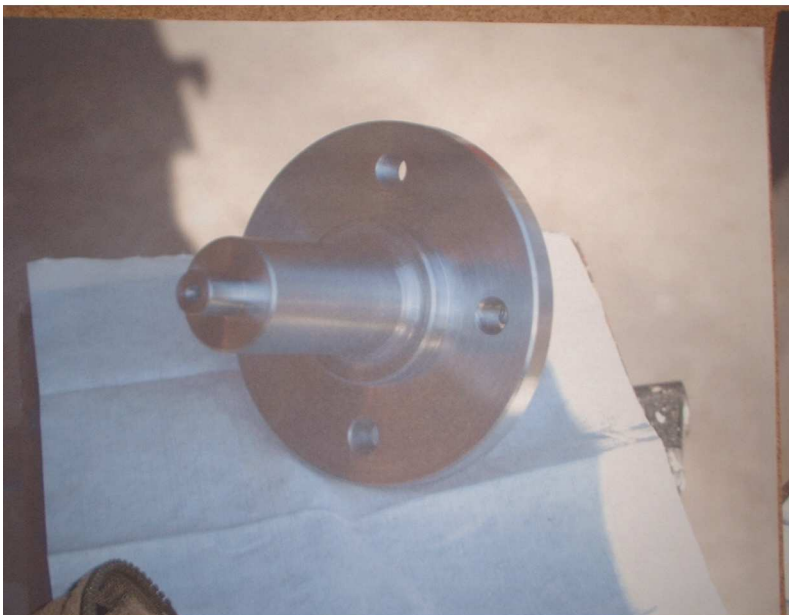
To the above right, a 6 to 1 reduction mechanism for a stepper motor.

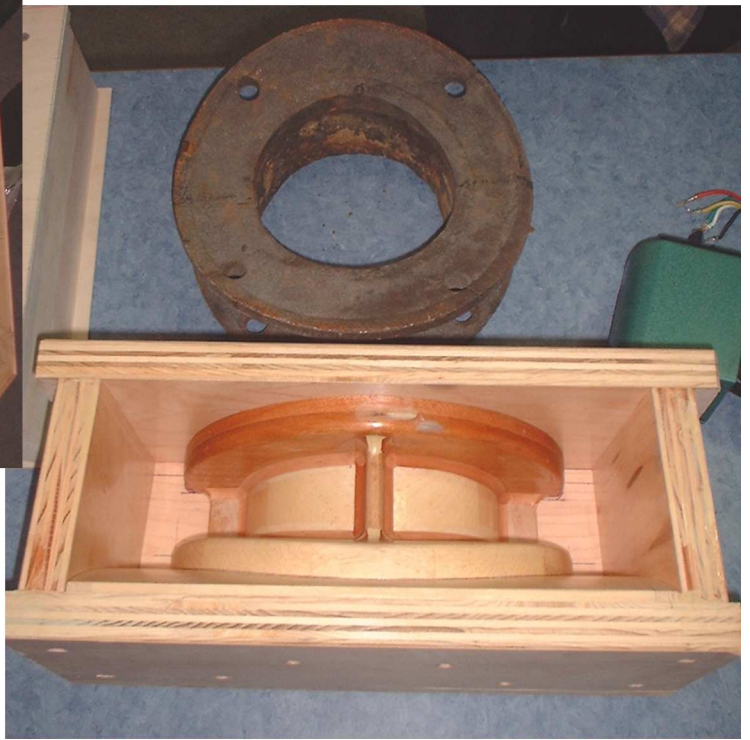
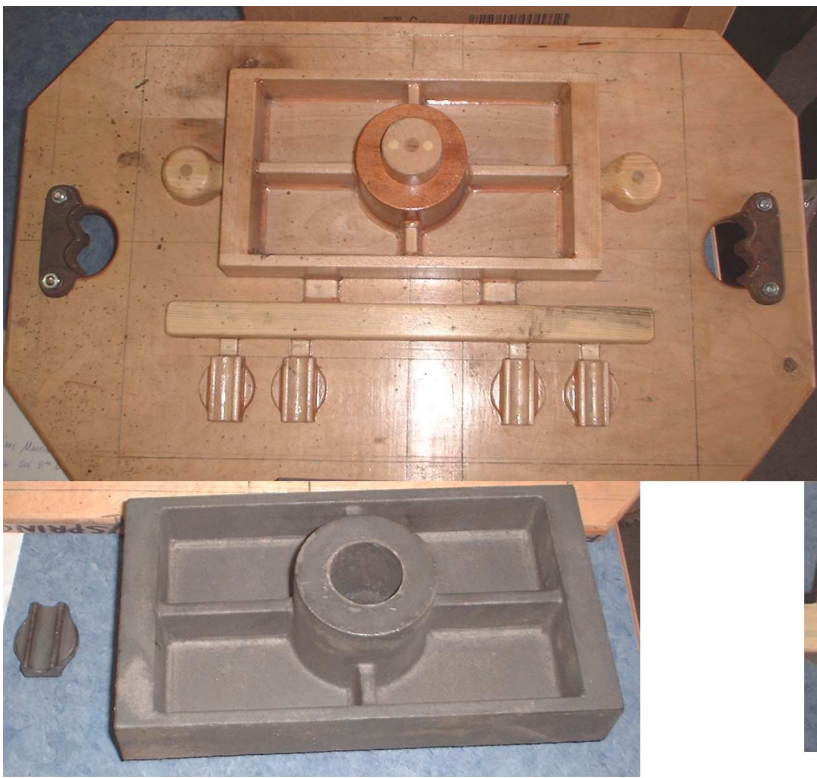


An assortment of parts from a valve train (right).

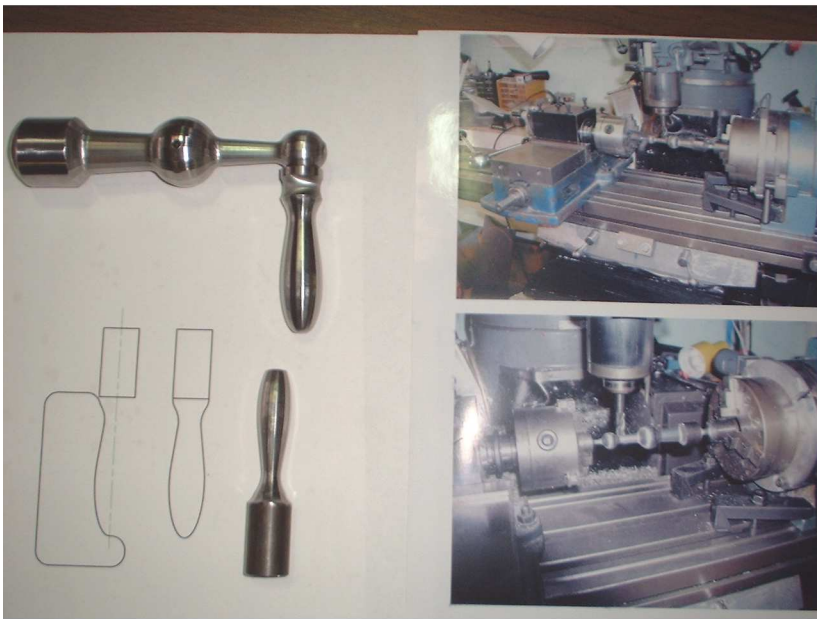
Below right, a South Bend shaper which was in process of being sold to another member. In very good condition.

Below, a shaft adapter used for a pitching machine.





This pattern board and core box was developed by Gary Martin to cast parts for a steam locomotive smoke stack.



Bill Miller showed his method for milling handles developed while converting a small mill to CNC. (left)

Below are further examples of boat building by Bob Eaton.

