

President: Greg Dermer	(503) 281 9238	depcco@easystreet.com
Vice President: Pat Wicker	(503) 612 8499	pwicker@aracnet.com
Treasurer: Bud Statton	(503) 324 9514	budstatton@worldnet.att.net
Membership: Carl Petterson	(503) 245 8335	tomten@easystreet.com
Editor: Jarod Eells	(503) 830 0157	jarod@eells.us
Webmaster: Greg Dermer	(503) 281 9238	depcco@easystreet.com
Member-at-large: Bill Miller	(503) 246 2175	bilau@gte.net

For The Beginner #32 by Wes Ramsey

HOW TOLERANCES AFFECT MATING PARTS

When two parts mate or are interchanged in an assembly, tolerance becomes vitally important. Consider the following example: The shaft must fit the bearing and be able to turn freely. The diameter of the shaft is specified as 1.000 +/- 0.001. This means that the maximum limit of the shaft is 1.001 and the minimum is 0.999. The tolerance is then 0.002 and bilateral. The maximum limit of the bearing bore is also 1.001 and the minimum limit is 0.999. The tolerance is once again 0.002. Will the shaft made by one machine shop using the tolerances specified fit the bearing made by another machine shop? If the shaft is turned to the maximum limit of 1.001 and the bearing is bored to its minimum limit of 0.999, both parts would be within acceptable tolerance, but would not fit to each other since the shaft is 0.002 larger than the bearing. However, if the bearing bore was specified in limit or unilateral tolerance of 1.002 +0.002 /-0.000, the parts would fit as intended. Even if the shaft was turned to the high limit of 1.001, it would still fit the bearing even though the bore was machined to the low limit of 1.002. Although a machinist is not usually concerned with establishing tolerance and limit specifications, you can easily see how fit problems can be created by overlapping tolerances discussed in this example.

August Meeting Summary

Our August PME meeting was at Grant Carson's shop. The show-and-tell portion had a representative mix of members and their projects. Pictures and more details on the following pages.

Next month we will meet at Bud Statton's shop. This is our annual picnic and will feature member projects, lunch and metal casting. The event runs throughout the day and provides an opportunity to ask questions and see how patterns and molding work to produce the final casting. The event is scheduled for Saturday, September 9th at:

44750 NW Star St.
Banks, OR 97106

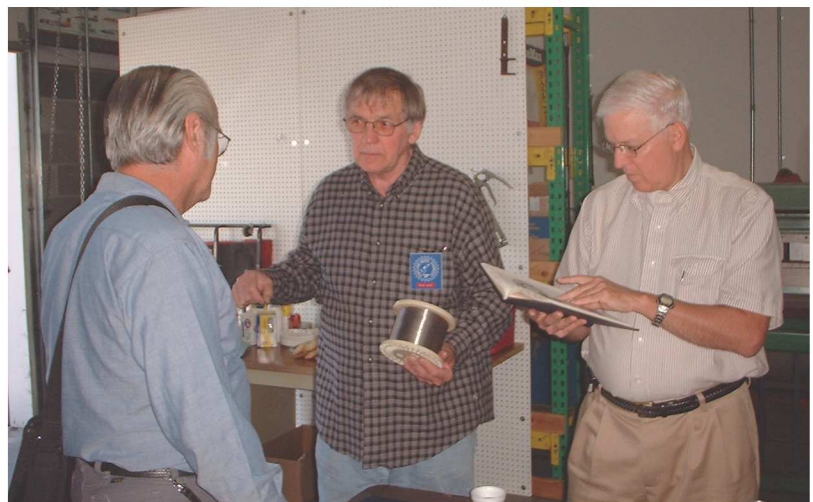
Bring a project to show -- complete or not. Also, if you have a pattern you would like cast, bring it as well. Directions and a map are provided on the next page.

Upcoming G.E.A.R.S. Sept 23-24

Remember to mark your calendars for the 2006 GEARS which showcases Model Engineering and Home Shop Machining. The event runs both days from 9am to 4pm.

Kliever Armory
10000 N.E. 33rd Drive
Portland, Oregon 97211-1798

More information is available at the GEARS website:
<http://oregonears.org/>



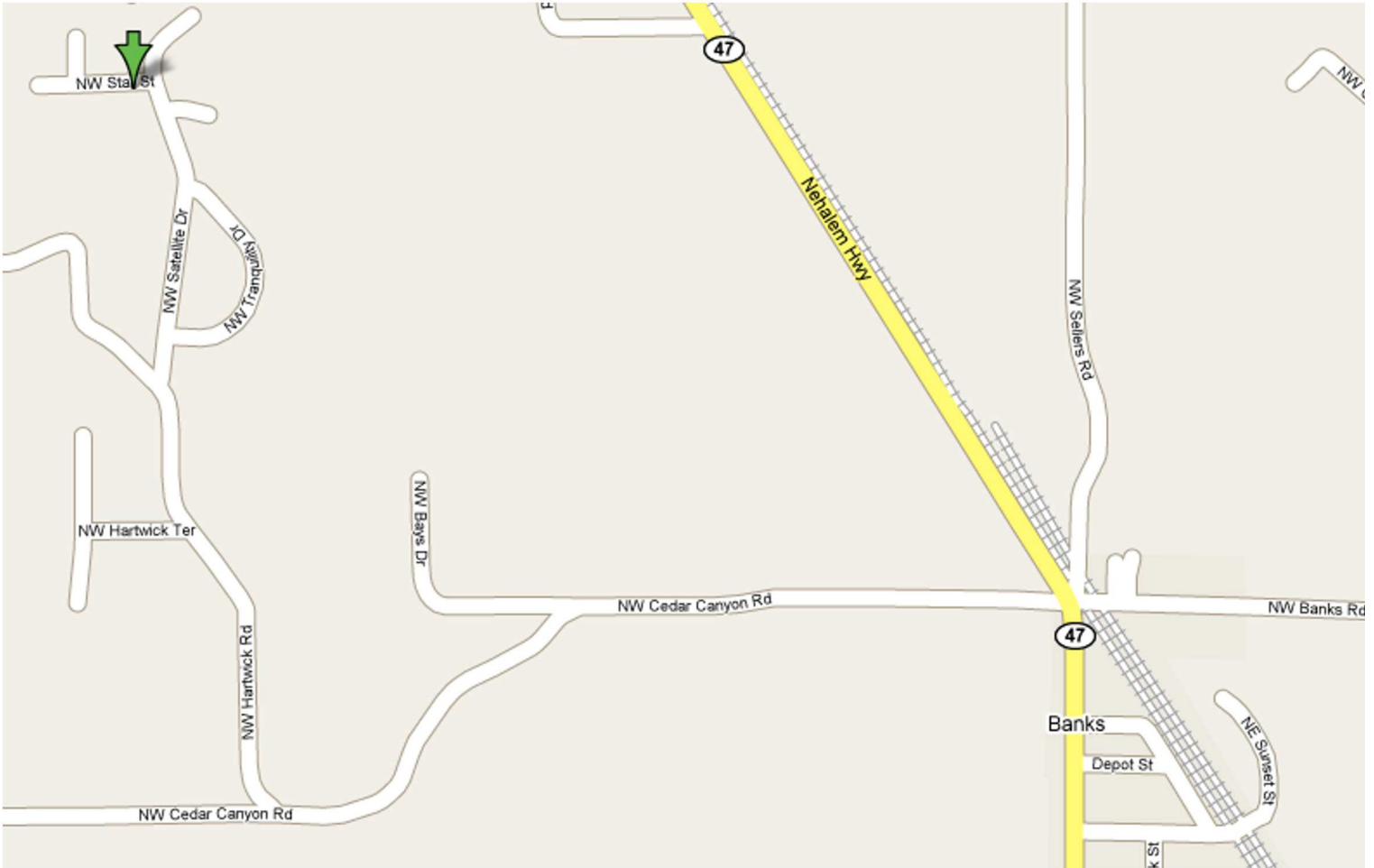
Gary Hart and Bud Statton look over some auction items.

September 9th PME Picnic and Casting Party

Bud Statton's Shop

(503) 324-9415

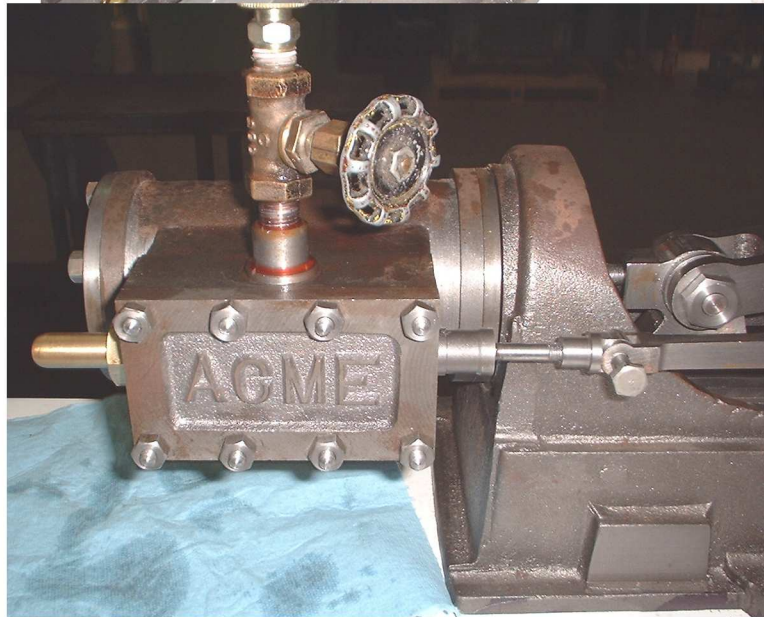
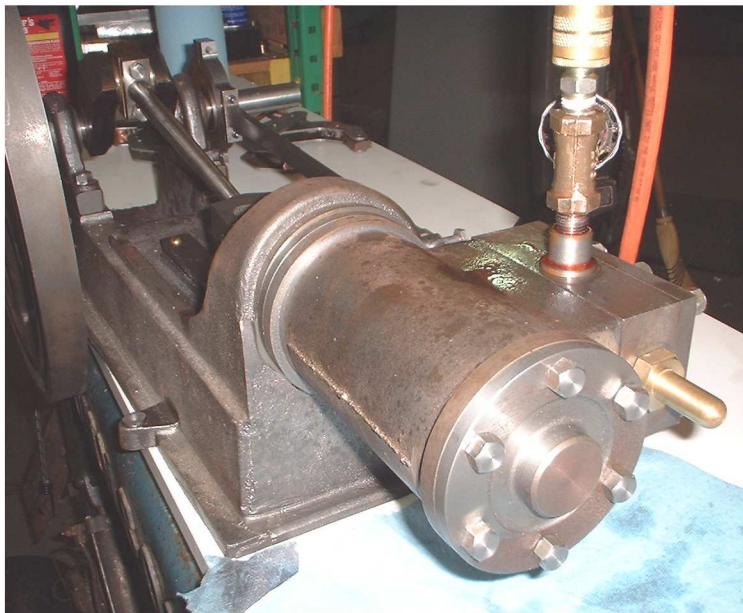
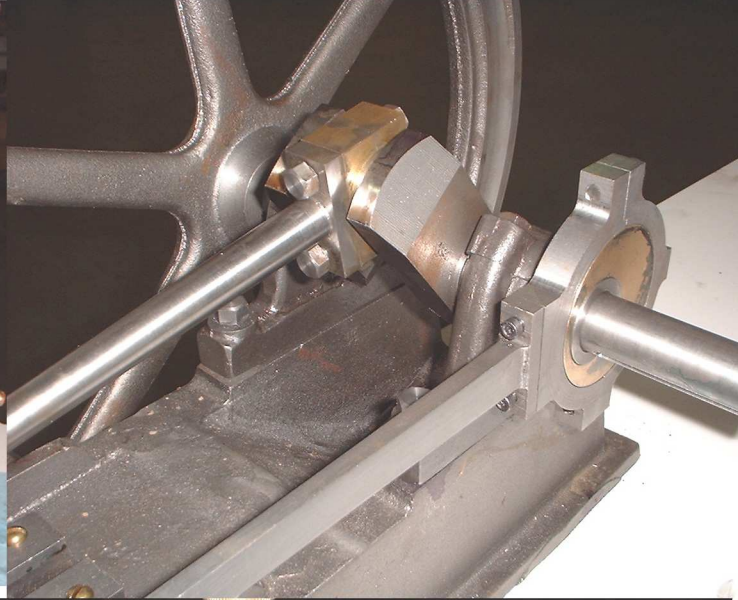
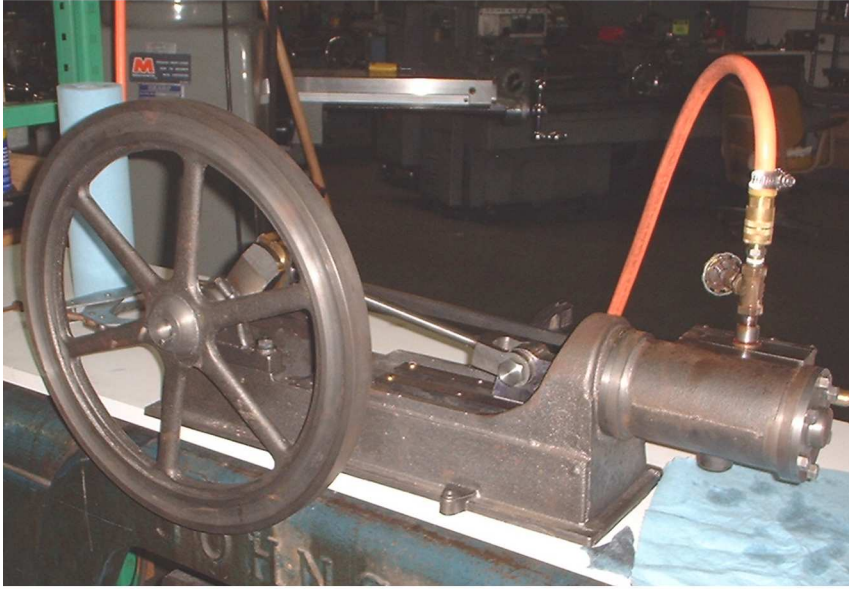
Lunch provided around noon-1:00pm.
Member's show and tell after lunch.



Direction from Portland:

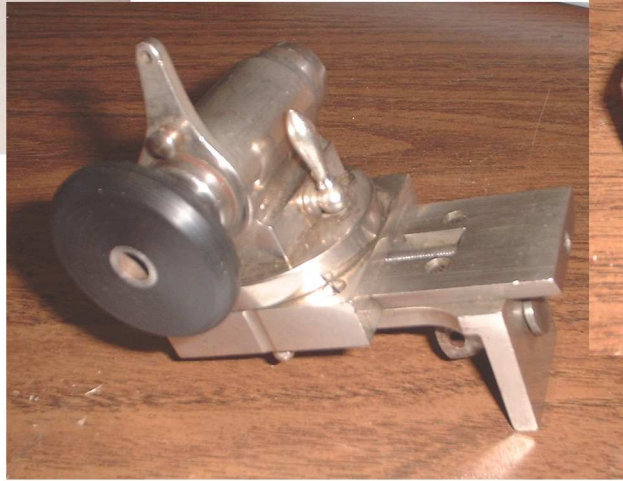
Go west on Highway 26 towards Banks.
Continue past the Highway 6 exit on Hw26.
Turn left onto NW Banks Road.
After rail road tracks, it turns into NW Cedar Canyon Rd.
Turn right onto NW Hartwick Rd.
Bear right onto NW Satellite Dr.
Turn left onto NW Star St.

Bud's place is on the SW corner.

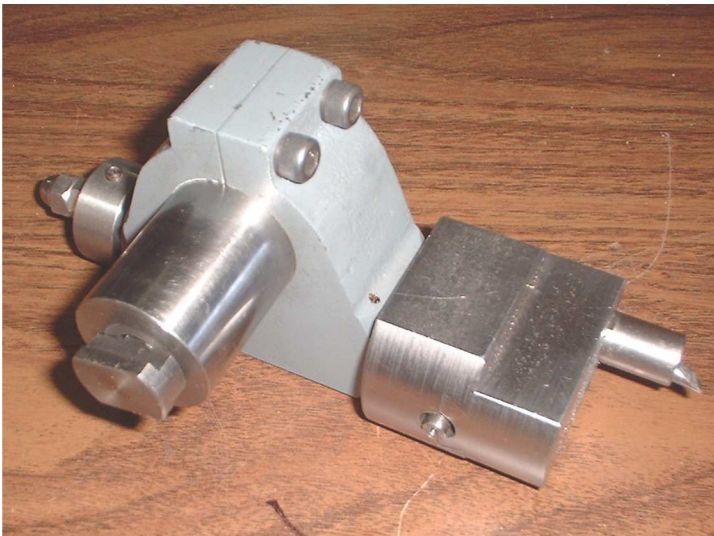


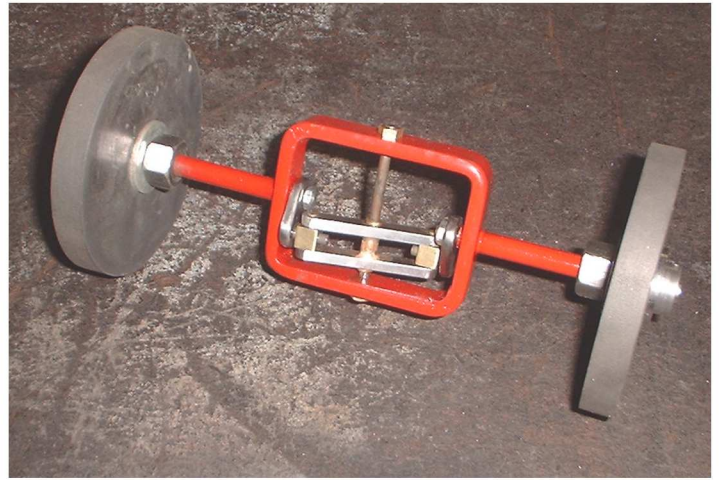
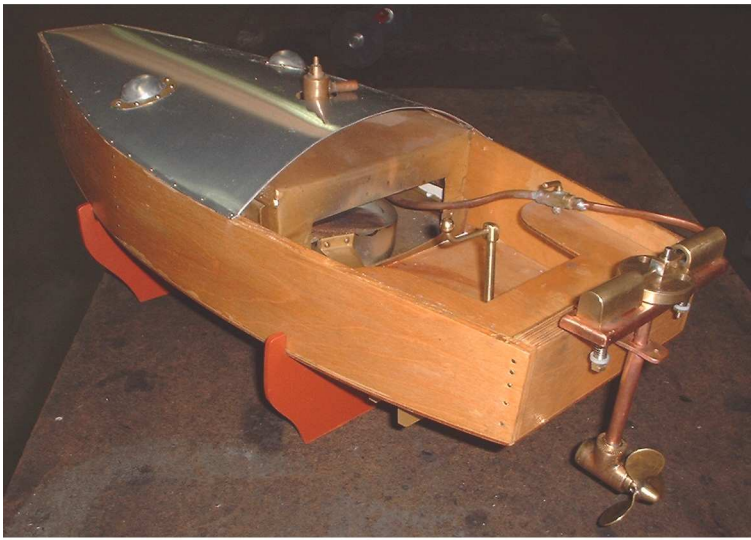
Al Pohlpetter ran his Lindsay-inspired steam engine for us. He has brought in pieces of the engine in previous months and it's great to see it reach the working stage. He also brought in some of the patterns and resulting castings.





Tom Hammond described a couple items from the Hardinge Bros catalog. The wheel cutter he found was missing a ball crank so he set about making new ones. Below left is the ball cutter he used and to its right is the special holder. It uses a piece of Delrin that is sized to just hold the part for the ball turner. He also talked about some modifications to the handy tripod. In the upper right, is a cut-off tool attachment.





The steam boat model (UL) was shown by Gary Hart. He also brought a reversing differential with a novel working mechanism.

Bud Statton showed some of the cast iron wheels he has been working on in Gary Martin's patternmaking class.



This fine watchmaker's lathe displayed by Jim Pfaltzgraff has a 1/40 HP motor and 2" 3 jaw chuck (LL). He also gave an update on the patternmaker's vise pattern.

