

Bay Area Engine Modelers Club

The Crank Calls



May 2016

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MEMBERSHIP \$25.00 US

Contact Paul Denham at
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NEXT MEETING

**May 21, 2016 at
GGLS meeting room in
Tilden Regional Park
Berkeley, CA**

Doors open at 9:00 AM
Meeting starts at 10:00 AM

Upcoming Events

BAEM meetings: 3rd Saturday of the month

WEME Show August 26 - 28, 2016 at the Alameda
County Fairgrounds

MEETING PLACE FOR May 21st

We will meet this month (May) at Golden Gate Live Steamers (GGLS) meeting room in Tilden Regional Park above Berkeley, CA.

MEETING NOTES

April 16, 2016
Larry Zurbrick, Editor

President Paul Denham called the BAEM April 2016 meeting to order at 10:04 AM.

Paul opened with a discussion to the members of whether we want to continue to alternate meeting locations between GGLS in Tilden Regional Park and Chabot College or whether to just meet at GGLS. The pros and cons were discussed by the group. Paul requested that members send him an e-mail stating their preference.

VISITORS: We had no visitors this month.

FIRST POPS: Gene Baker had a 1st POP of his hit and miss engine using one of Paul Denham's BBQ lighter ignitions.

Carl Wilson got his Mery Engine running using two propane carburetors. Carl has converted back to a single carburetor and is going for another 1st POP.

EVENTS:

Steve Hazelton, Al Aldrich, Tim Horn and another member were at the mini Makers Faire in Benicia displaying their engines during this month's club meeting

We will show our engines at Golden Gate Live Steamers meeting on Sunday, June 26th - stay tuned!

Penngrove Power one day show will be held July 9th in Penngrove, CA.

We have been invited to display engines at the USS Hornet Museum in Alameda on July 4th. More details at upcoming club meetings.

Our annual Western Engine and Model Exhibition (WEME) will be held on August 26 through 28 at the Alameda County Fairgrounds in conjunction with the Goodguys 30th West Coast Nationals

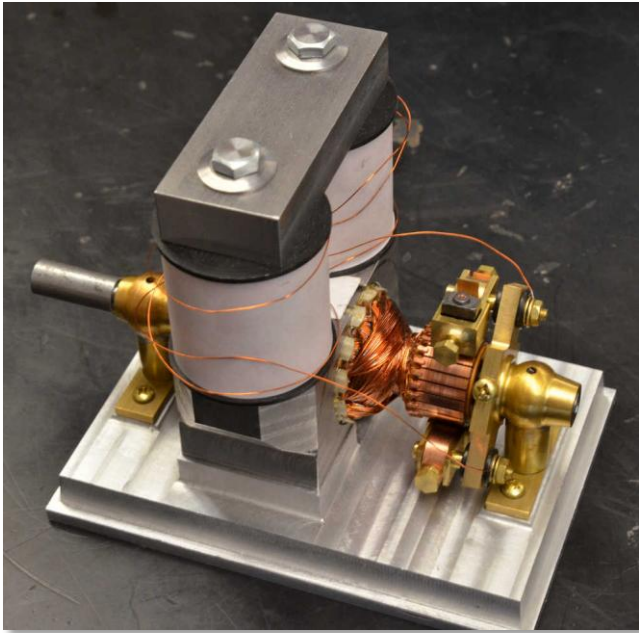
See <http://www.baemclub.com/pages/Events.html> website for more information on events.

TREASURER'S REPORT: Paul Denham says that we are solvent. **He is accepting dues for those who need to re-enlist for 2016. Dues are \$25.00 per year.**

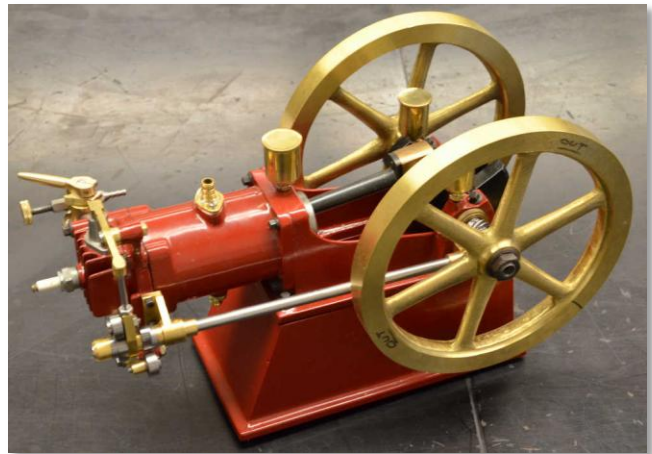
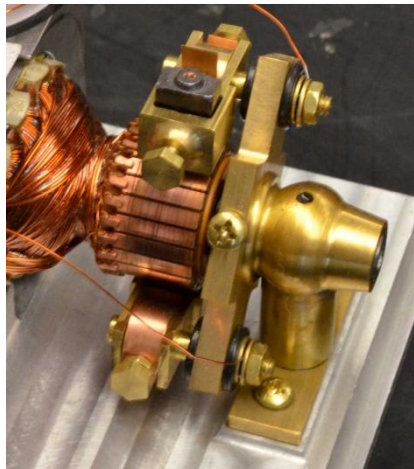
CLUB BADGES: If you need a badge, contact Mike Rehms (mrehms@byvideo.com) who has offered to produce them.

BITS AND PIECES

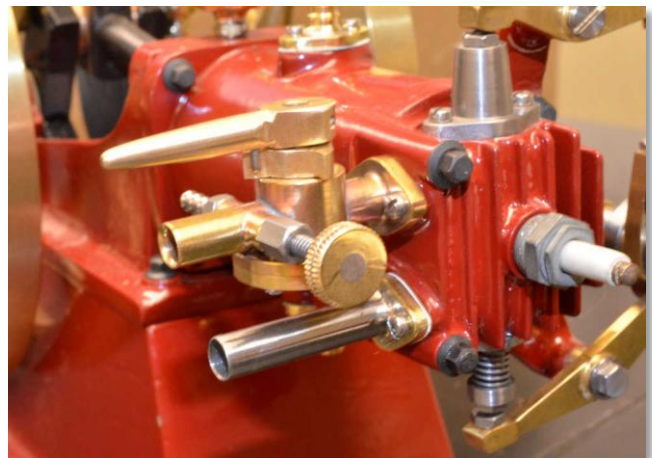
Although not a first POP quite yet, Paul Denham has made some progress on his large Stirling engine.



Peter Lawrence has "done the math" and wound some new field coils for his Edison dynamo in order to obtain the desired voltage of 12 volts at 1200RPM. His measurements indicated an output of approximately 10 volts at 1200 RPM. He used his lathe to drive the dynamo. He counts upon the residual magnetism in the coil core to get the dynamo started. Peter has volunteered to present a Tech Topic talk on the math for calculating the coil winding parameters in the future.

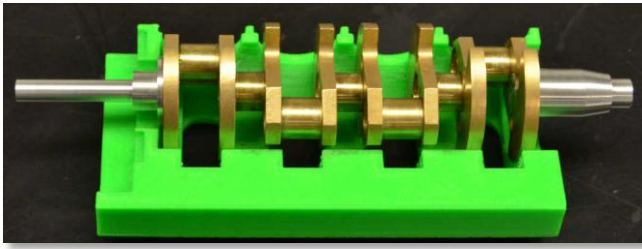


Dwight Giles has made some progress on his side shaft Westbury Wyvern inspired design engine. He finished the carburetor for the engine. Dwight had made the patterns and the castings. It's a project that he started about 15 to 20 years ago and recently pulled out to restart work on it. The engine has a 1.25" bore with a 2" stroke.



The thread on the carburetor's needle valve is a 4-48 thread made from a 5/32" SS rod that he single pointed on his engine lathe. To cut the threads on the needle valve Dwight first cut the 15 degree taper (30 degree included angle) on the SS rod. He then took a brass rod and put a minimum depth hole into the end of the rod with a 1/8" center drill. The brass rod was then held in the lathe's tail stock and acted as a reverse dead center with the taper of the needle valve inserted in the minimum depth hole of the brass rod and the SS rod being held in the lathe's collet. Dwight says that a sharp single point tool is necessary so as not to deflect the work.

The bronze flywheels had been cast by the DeVecchio foundry in Stockton, CA.



Jim Piazza has made a mockup of an Offy crank using 3/16" brass plate for the throws and K&S tubing for the journals. Jim noted that the 3/16" brass plate was work hardened and machined very poorly. It was assembled using a wicking Loctite® adhesive. The green bit is a 3D printed Offy engine 1/2 of a crankcase.



Mike Rehmus described his gear and cam lobe making processes. The gears pictured above are for two different engines that Mike is currently working on. The internal ring gear was cut in Dwight's shop using a single tooth gear cutter that Dwight had made. The single tooth cutter was held in a boring bar. The single tooth gear cutter/boring bar was put in a mill spindle, the mill spindle locked, the gear blank inserted and locked into the fixture (photo below), the fixture clamped to the top of a Sherline digital rotary table, and each tooth broached individually. The cutter was advanced about 0.003" to 0.004" each cut by moving the mill table and cutting to a total depth of 0.070". Mike noted that it took a long time to cut the 64 teeth gear. An equivalent gear from Small Parts is about \$100 so it was worth the time spent. The pitch is 32 dp. The internal gear is for a epicyclic steam engine.

The other two gears are for a GEM 1 engine. These were cut in the conventional way with a gear cutter and dividing head on a mill.

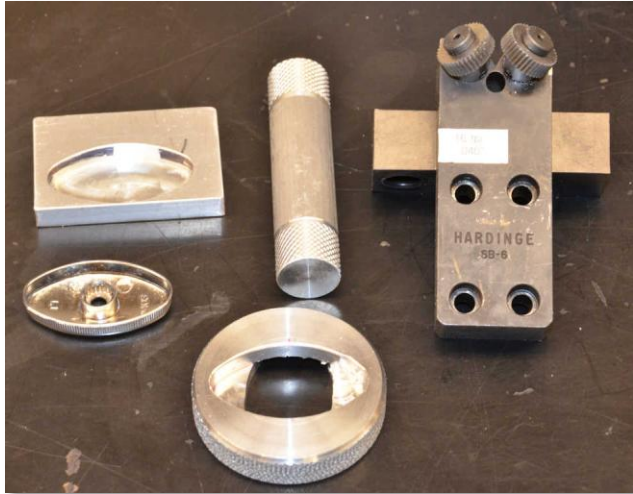


Mike Rehmus next described making a cam lobe using an offset fixture in a lathe.

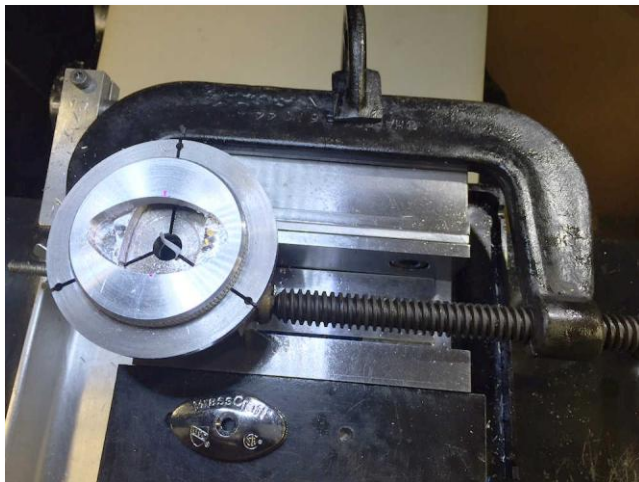


The purpose of the fixture is to hold a cam lobe blank offset from the rotational axis of a lathe. Note that the fixture pictured above is designed to cut multiple cam types and lobe lifts. The cam is cut on the lathe by incrementally rotating the cam blank on the fixture between cutting passes. Note that the lathe cross slide is set to cut the base circle diameter and not changed during the complete cam cutting process. Note that the cam blank is not rotated a full 360° on the fixture otherwise a round lobe will

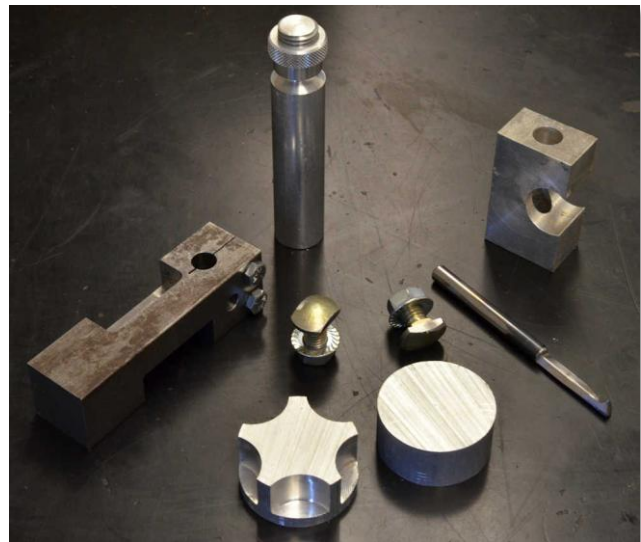
result. A detailed description of the method and calculations for determining the fixture offset values, number of cuts based upon the cam parameters can be found on Ron Chernich's web site <http://www.modelengineneeds.org/> in the article "How To Make a Camshaft by Offset Turning" by Steve Huck.



Steve Jasik gave a Bit and Pieces off topic project talk describing a shop made "handle cheater" tool for gaining more leverage on a sticking water shut off valve.



Steve describes the machining procedure, "The part is held in a 3" Hardinge step chuck which is held in a square 5C collet block in a (Kurt) vise. I needed a combination of 2 C clamps to keep the collet block from moving in the vise." The photo above is as Steve says, "Sometimes a vice is not enough."



Jerry Franklin is continuing to make bits and pieces as he learns machine shop techniques. At a previous meeting he showed his external single point threading of a non-standard 13/16"-11 thread. Jerry made an internal threading tool from harden drill rod (on the right hand side of photo above) and threaded a matching nut. He made a replacement knob for band saw, hold down bolts for his mill from carriage bolts.

TECH TOPIC

Mike Byrne

Mike Byrne's tech topic presentation was a survey of ignition systems available for model engine applications. Kettering has been a common system for the last 100 years but Hall effect sensors, integrated circuits, and microprocessors now provide more options for the model engineer.

Model Engine Builder #34 has an in depth article on building an ignition driver board. Other references and sources are shown below.

References & Sources

- Bob Shores, [Ignition Coils and Magnetos in Miniature](#), 1977
- Peter Wood, "Some Considerations in the use of Hall Effect Sensors in Ignition Circuits", Southern California Home Shop Machinist site, 2009
- "How to Build Transistor Ignition Modules", Outpost Enterprises (www.jerry-howell.com)
- Don Grimm, "Magneto Design and Practice Working Paper, 2009
- Sage, Gedde, Rehmus, "Does your Ignition System Leave Your Engine Feeling Old Fashioned", *Model Engine Builder* #34, 2015
- Jan Ridders, "Blokker Spark Ignitor", ridders.nu
- Outpost Enterprises
- S/S Machine & Engineering (www.cncengines.com)