

# The Crank Calls



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## **MEMBERSHIP \$25.00 US**

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### **NEXT MEETING**

**Saturday, December 9, 2023, at the  
Golden Gate Live Steamers clubhouse site in  
Tilden Park, Orinda, CA**

Gate opens at **10:00 am**  
Meeting starts at **11:00 am**

### **Upcoming Events**

- Dec 9: BAEM meeting/potluck at GGLS
- Jan 20: BAEM meeting at GGLS
- Feb 17: BAEM meeting at GGLS

See below for more details regarding events. Watch Crank Calls, BAEM emails and BAEM web page for updates. BAEM meetings are usually 3rd Saturday of the month except December.

### **MEETING NOTES**

Bay Area Engine Modelers met at Golden Gate Live Steamers on November 18, 2023. There were 18 members in attendance. No guests.

President Paul Denham opened the meeting by welcoming attendees.

### **NEW MEMBERS/VISITORS**

BAEM members are reminded that visitors are welcome at our club meetings, and we're always looking for new members.

### **TREASURER'S REPORT**

President Paul Denham reported regarding club finances. He noted that club finances were sound with insurance the main expense.

It is time to pay dues for 2024. Dues of \$25 dollars are due, and checks can be mailed to Deirdre Denham at 1937 Merchant St, Crockett, CA 94525. Make checks payable to "BAEM".

## CLUB BADGES

If you are a member in need of a badge, contact Mike Rehmus (mrehmus@byvideo.com) who has offered to produce them.

## SHOWS AND EVENTS

Paul Denham briefly discussed our club's involvement with shows this past year. Our major events were the Maker Faire and the GGLS open house weekends in the Spring and Fall. We adjusted our monthly meeting schedule to coincide with the GGLS event, and we should continue to do this to encourage our involvement with GGLS. As noted in last month's Crank Calls, the Maker Faire was a much bigger event than we realized. We need to start planning our involvement with the Maker Faire much earlier, so that club members can better plan their participation.

## BAEM December Potluck

BAEM members are reminded that our December meeting is our annual potluck. The meeting date is the 2<sup>nd</sup> Saturday of the month, and the meeting will start an hour later, at 11:00am. Bring a dish to share and enjoy the company of your fellow club members. Guests are welcome and encouraged.

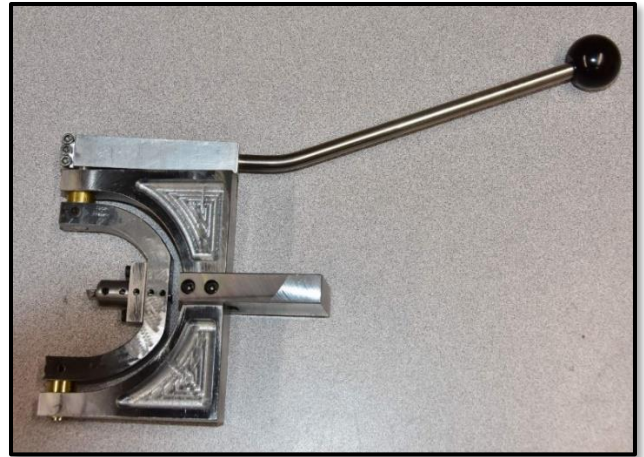
## FIRST POPS

No first pops this meeting.

## BITS AND PIECES

Paul Denham described issues with the low voltage ignition system on the Red Devil that he encountered while at the Makers Fair. The fix was larger gage wire and increased voltage.

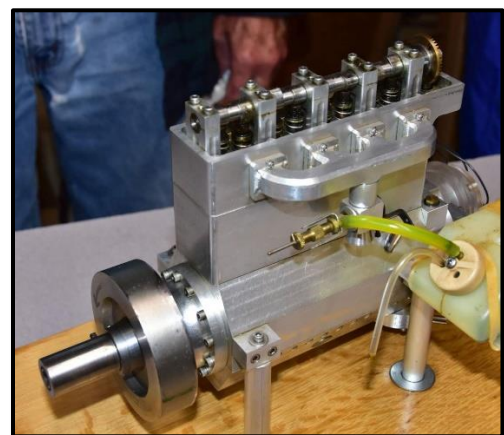
Paul also showed his recently completed ball cutter for use with his Monarch lathe. Cutter was based on Dwight Giles's design.



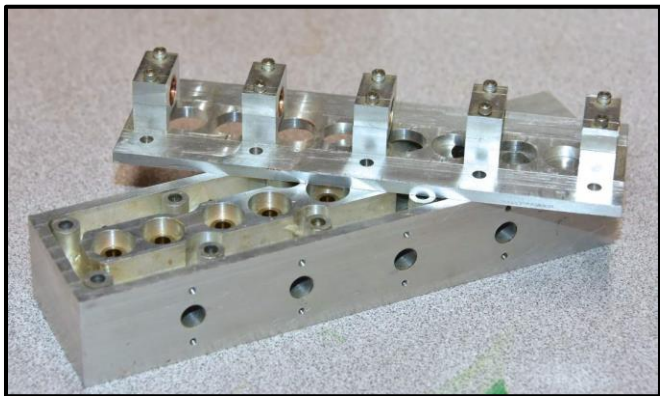
*Paul Denham's ball cutter*

Peter Lawrence brought in the inline-four-cylinder engine he designed and built as a pathfinder for his Merlin V12 project. He had it running with two valves per cylinder and is now building a second head to experiment with in-head water cooling.

In building the 4-cylinder prototype, Peter's goal was to verify the Merlin four valves-per-cylinder head design, but he got a serious case of Merlin V12 fever, and never finished the inline-four with quattro-valves. Now that the Merlin is running, he's returning to the inline four. Peter believes this engine will be more convenient than the Merlin to run at shows, although he will always bring both to display. The heads of the Merlin were done in the BC era (before cell-phones), so the build process didn't get extensively photographed. This time around, he's making a much better photo record of constructing the complicated rocker arms and cam support brackets.



*Peter's 4-cylinder Merlin prototype, with original cylinder head*



*Peter's revised Merlin Prototype head,  
with machined water-cooling passages*

Charlie Reiter showed some amazing flea market finds. Recall last month he had a three-cylinder radial aircraft steam engine of very uncertain provenance. He then assembled a steam powered outboard motor made from the three-cylinder radial and the bottom half of a hand operated outboard trolling engine.



*Steam-powered outboard*



*Steam outboard engine, up close*

George Spain showed the two-cylinder vertical engine he designed and built. He described a frustrating series of issues involving crank shaft strength of materials and machining problems. After making several cranks shafts and consulting with Dwight, the impressive engine is running.



*George Spain's two-cylinder vertical engine*



George Spain starts it up

Larry Zurbrick showed his ten-pound counterweight for his equatorial telescope mount. He made it from a scrounged piece of stainless steel and discovered that it was likely 304 rather than 303 since he was able to work-harden the part and overheat a number of cutters. The finished weight with a nice brass clamping rod is very attractive.



Dwight Giles piston ring fabrication Tech Talk

Dwight Giles built three Challenger V8s and four Black Widow V8s, in addition to various smaller engines. That's a lot of pistons and piston rings. Over the years, he became quite proficient regarding machining piston rings from cast iron. He learned a lot about model engine ring fabrication. Paul invited Dwight to share his considerable knowledge, by presenting a tech topic discussion on fabrication of piston rings in the home shop.

Dwight noted that his technique was largely derived from the George Trimble ring-making article found in *Strictly IC*. ["Design and Fabrication of Piston Rings" by George S. Trimble in *Strictly IC*. Part 1 in Vol. 2, No. 7 (Feb/Mar 1989). Part 2 in Vol. 2, No. 8 (Apr/May 1989). Part 3 in Vol. 2, No. 9 (Jun/Jul 1989).]

Dwight brought in a wooden box full of gear making fixtures, jigs, arbors, cutters, heat treat bags and gap sanders. Dwight commented on each item as it emerged from the box and noted the different challenges in machining compression and oil rings.

Dwight described the need for precise sizing of the cylinder. This is accomplished via boring, then lapping the cylinder to its precise final dimensions. Dwight makes his laps of brass and uses diamond paste for lapping. Diamond paste is available in a variety of grit sizes.



*Dwight's lapping device, with diamond paste saved for next time*



*This fixture holds multiple rings during the annealing process. The rod embedded in the side of the inner cylinder spreads the ring gap a precise amount, holding it there during the heat treatment process. The notch in the inside of the cap permits the cap to fit snugly, holding the rings in an orderly stack.*

Workflow summary:

- (1) Machine a tube of cast iron to net cylinder bore diameter & part off rings.
- (2) Grab rings with a shouldered internal expanding collet and finish to width and chamfer inside corners.
- (3) Crack rings and knock off the high spots on the fracture surfaces with abrasive paper or a needle file, but don't take out any more material than necessary.
- (4) Spread the rings with a rod in the gap and anneal to set the shape.
- (5) File the gaps, checking in a cylinder.
- (6) Install.

Trimble's articles in *Strictly IC* gives formulas for the gap rod diameter and plans for a guillotine for cracking the rings and a retort for minimizing scaling during the annealing step.



*Fixture for slotting oil control rings*

Dwight recommends you make extra rings because not all will crack nicely, and some might break during installation.

## RAMBLINGS

Working on an interesting project? Got a great BAEM story? Share it with us here. Send us pics and project details, and your hard work will be shared with the entire club.

## FOR SALE

Owner of several Elmer Wall model engines seeks someone to get them in running condition and to improve their appearance. Amount of compensation to be negotiated. Contact Jeff Richards via email: [eatapeach78@yahoo.com](mailto:eatapeach78@yahoo.com)

Got something you'd like to sell? Your ad is free and will be seen by likely customers.

## NEWSLETTER CONTRIBUTIONS

Your contributions to this newsletter are appreciated: workshop reports, tech articles, reviews, historical pieces, whatever. You contribute, we'll figure out how to post it. Send your contributions to either or both of us. Thanks!

-Mike Byrne at [mgbyrne3@comcast.net](mailto:mgbyrne3@comcast.net)

-Wes Wagon at [weswag@ix.netcom.com](mailto:weswag@ix.netcom.com)