The Bay Area Engine Modelers Club, Branch 57 of EDGE&TA

MEMBERSHIP
$25.00 US
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The Crank Calls

November 2008

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NEXT MEETING
Nov 15, 2008 at
Chabot College, building 1400
25555 Hesperian Blvd, Hayward 94545
Doors open at 9 AM
Meeting Starts at 10 AM

Upcoming Events

SWAP Meet at Nov Meeting
Bring goodies to sell !!

MEETING NOTES

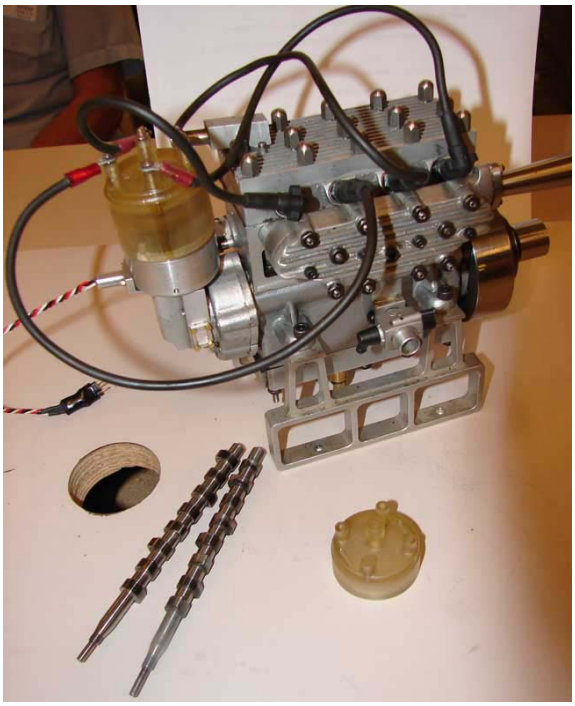
10-18-08 Carl Wilson

Bill White, from Castro Valley, was our guest at the October meeting. Treasurer, Ken Hurst, reported a balance of $5785.

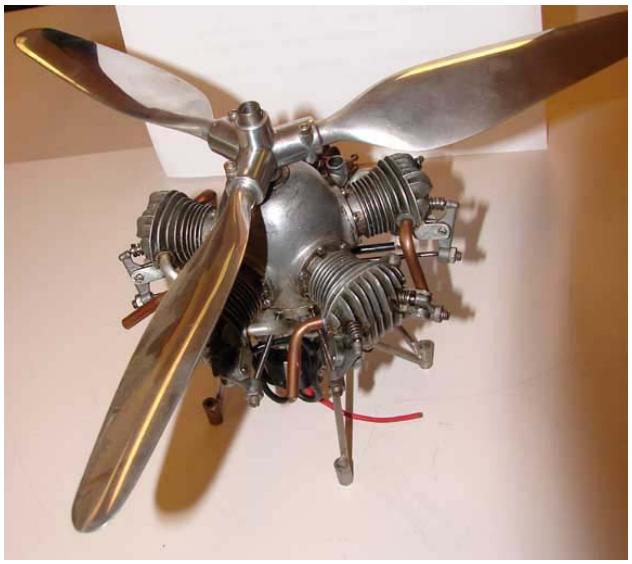
Bay Area Engine Modelers is now incorporated in the State of California. The applications for tax exempt status have been filed with Internal Revenue Service and the Franchise Tax Board.

I regret to report the death on October 6th of John Vlavianos. John was a long time member of BAEM. His first career was with the State of California. In retirement he worked at DeVecchio foundry in Stockton. He made replacement casting for many commercial model airplane engines, designed his own engines, and made patterns and castings for some of the members of BAEM.

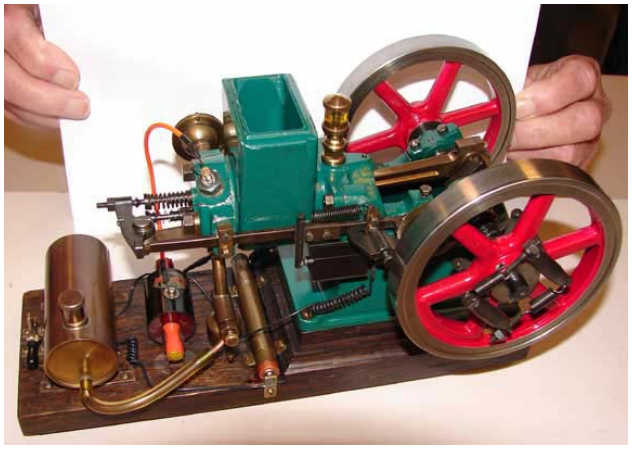
Dick Pretel and Paul Bennet attended the fall meet of the San Francisco Yacht Club held at Spreckel's Lake in Golden Gate Park. With them was former member of BAEM and long time member of the yacht club Ed DeGear. Ed's magnificent boat, Margie, was presented to the yacht club. Margie has been three years in a major rebuild. Dick Pretel worked his magic on the vertical two cylinder two stroke engine and other friends rebuilt the hull. The photo above is of some of the steam engines at the meet.



Jaime Quevedo took First Pop honors with this 4 cylinder 4 stroke Seal. He did a lot of work getting it to first pop but has not achieved sustained running. First was new pistons and rings to cure the "no-compression" problem; then some changes in the distributor to eliminate internal sparking in the unit. The Seal has run long enough for Jaime to diagnose valve float at fairly low engine speeds. He is working on calculating spring pressure so he can replace the valve springs.



Jaime bought this Morton M5 in England. He has installed new rocker arms made from 4130 steel to the design of Bruce Satra and made a new engine stand.

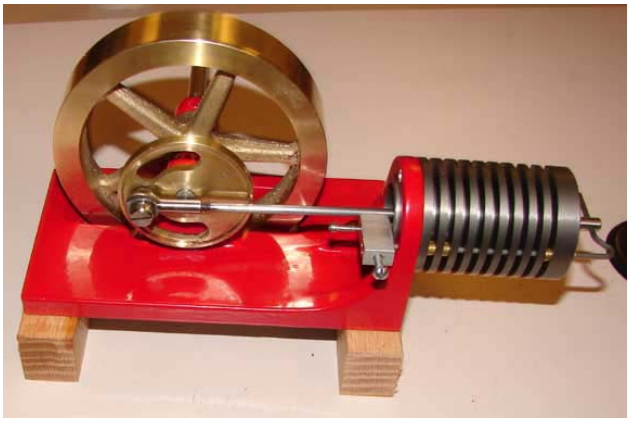


Don Cowles bought this Lil Brother designed by Paul Breisch at a clock shop in Denver. The owner didn't really want to sell, but a sufficient amount of cash changed his mind. The engine runs very nicely.

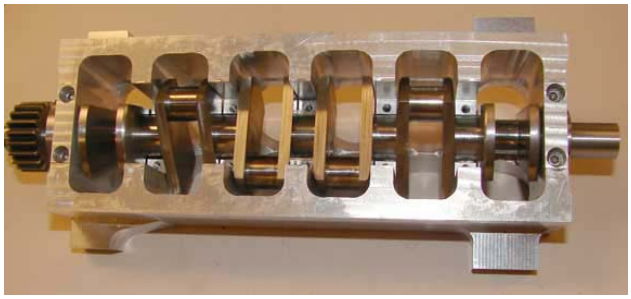
Jim Bove says "I keep building these Rube Goldberg engines…" Everything on this two cylinder oscillating steam engine was fabricated from stock pieces found in his shop. Jim did not go to the store once to buy something: the propeller was sitting around looking for a use. It runs on air but has not been steamed.

Last month George Gravatt reported a first pop with the Upshur T-Head Marine Engine, a model of an early 20th century Palmer ZR1 marine engine. George made a number of changes in the engine to get it running. First he added a dipper to the big end of the connecting rod to scoop oil from the sump which he increased in depth. Then he went to work on the block and increased the valve diameters from ¼" to 5/16" and increased the bore from ¾" to 7/8". On to the head which he redesigned to increase the compression ratio by extending it down into the cylinder and cutting tapered compression wedges above the valves. Last he added a 6v automotive ignition coil, condenser, and points. It now starts with a quick flick of the wrist. George has worked his magic again.

Steve Jasik displayed some special tooling for the lathe. On the left are commercially available box turning tools, commonly used on turret lathes. The workpiece is supported by the rollers which are placed behind the cutting tool. This allows turning small and/or long diameters without turning between centers. The items on the right are Steve's build of a guide bushing type steady rest so as to emulate a sliding headstock lathe. The aluminum block on the right bolts to the left side of his lathe carriage and travels with it. The stock extends from the collet in the headstock through the bushing and the cutting tool is placed immediately behind (to the right) of the bushing. The cut is made by feeding the carriage toward the headstock. To the left of the steady is a plastic block with several bushings and in front of that is a steel rod and its bushing showing the long diameter section to the left. Steve said that the turned diameter is within .0002" along it's length.



Last month I showed the pattern board for the flywheel of this vacuum engine and explained that Dennis Mead and I had done 3 pours (6 molds) with a 100% failure rate. During the intervening month I consulted with a professional patternmaker/foundryman and I made their suggested changes to the gating and runners and tried another pour. This time we got 5 usable castings. Note that I did not say "good" castings" as the melt was too hot and the castings have visible slag inclusions in their upper surfaces. Here are the results.



Peter Lawrence continues his build of a model of the Merlin V-12 engine: this month he showed the crankshaft nestled into its bearings in the crankcase. Peter said that the crank took 5 weeks to build and though it looks good, it has minor errors. He gave two tips for reducing chatter while turning long slender crankshafts: first, clamp lead weights to the throws not being machined, and second, turn the lathe spindle by hand for the last cuts on the journals. Peter used Dwight Giles' method for "boring" the main bearings in the crankcase: do it in the mill. Align the case to the mill table and cut the upper bearing surface with an undersize ball end mill. Then bolt the bearing caps in place (same radius cut at the bearing location) and then line ream them together.

TECH TOPICS

Ken Hurst presented the Tech Topics: Ignition systems for our engines:

Floyd Carter designed one of the first electronic switching systems to drive the 3v Modelectric coils that were popular for model aircraft engines. These systems worked well on the Wall 4 engines at lower compression ratios, but did not have enough energy available to run an engine that had been hot rodded a bit. Mike Neal built higher capacity systems that had some features tailored to our engines: suitable for 2 to 8 cylinders with higher compression ratios, an automatic turn off to save battery life, and a 28 deg spark advance built in. More information at:
http://www.mjnfabrication.com/pages/948292/index.htm

C.H. Ignitons (http://www.ch-ignitions.com/) sells capacitor discharge (CDI) systems for model aero engines that Ken recommends for our engines. Their high end systems have a computer controller timing circuit that provides automatic advance and retard for the spark timing.
All of the above systems can be driven with Hall effect sensors. Ken redesigned the Wall distributor to place the sensors on the crankshaft. Four rare earth magnets are placed on the crankshaft pulley (remember that the crank runs at twice the speed of the cam, so 4 magnets and one Hall effect trigger are needed.)
The last system was a little beyond what is needed for even Ken's model supercharged V-8: a MSD ignition that he uses on his (full-size) hot rod. This HEI high energy ignition fires multiple sparks through platinum plugs.

Chet Barker made the molded distributor cap and Dwight Giles built the distributor to match.

Paul Bennet added these comments: Ignition systems must supply enough voltage to ionize the air fuel mixture present at the spark plug and enough current to raise the temperature of the mix to the ignition temperature plus some reserve. The voltage requirement changes with the compression pressure and fuel-air ratio. Increasing the cylinder pressure raises the ionization voltage and a leaner mixture requires more current. The trend in current automotive practice is to run the engine as lean as possible to reduce emissions and increase fuel economy.

This requires an HEI system.
Using automotive coils on our small spark plugs may reduce their life. Coils from motorcycles, jet skis or similar devices may be more suitable.

Further information on ignition systems at:
http://www.jerry-howell.com/IgnitionModules.html