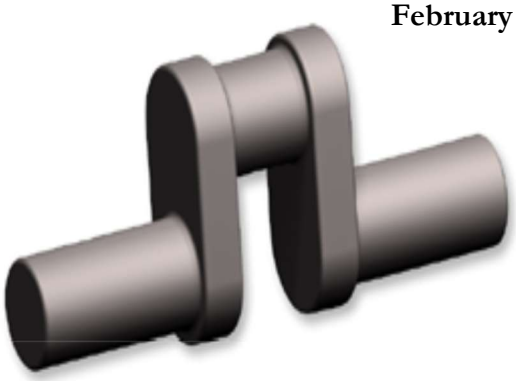
Bay Area Engine Modelers Club
www.baemclub.com

The Crank Calls

February 2021



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MEMBERSHIP $25.00 US
Contact Paul Denham at
pedenham@comcast.net

NEXT MEETING

Saturday, February 20, 2021 at the Golden Gate Live Steamers clubhouse in Tilden Park, Orinda, CA

Doors open at 9:00 am

Meeting starts at 10:00 am

Meeting will be outdoors, masks required.

Social distancing will be observed.

Upcoming Events

BAEM meetings are usually 3rd Saturday of the month except December. Upcoming meetings:

- February 20, 2021 at GGLS
- March 20, 2021 at GGLS

Watch Crank Calls, BAEM emails and BAEM web page for updates.

MEETING NOTES

January 2021

We were unable to hold a meeting in January due to Covid-related restrictions.

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

The 2021 dues of $25 are due. Pay now so you'll be all paid up. Give your check to Paul Denham. Dues can also be mailed to Deirdre Denham at 1937 Merchant St, Crockett, CA 94525. Make checks payable to "BAEM".

The BAEM club is solvent. Recent contributions to the club treasury have been generated by sales of engine construction "kits" (and other items) by Dwight Giles. The club thanks Dwight for generating these contributions.

BAEM's YouTube Channel: https://www.youtube.com/channel/UCZ7VbDw_y0GtNm1n6KWiQkg

CLUB BADGES

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

SHOW PARTICIPATION

Nothing to report.

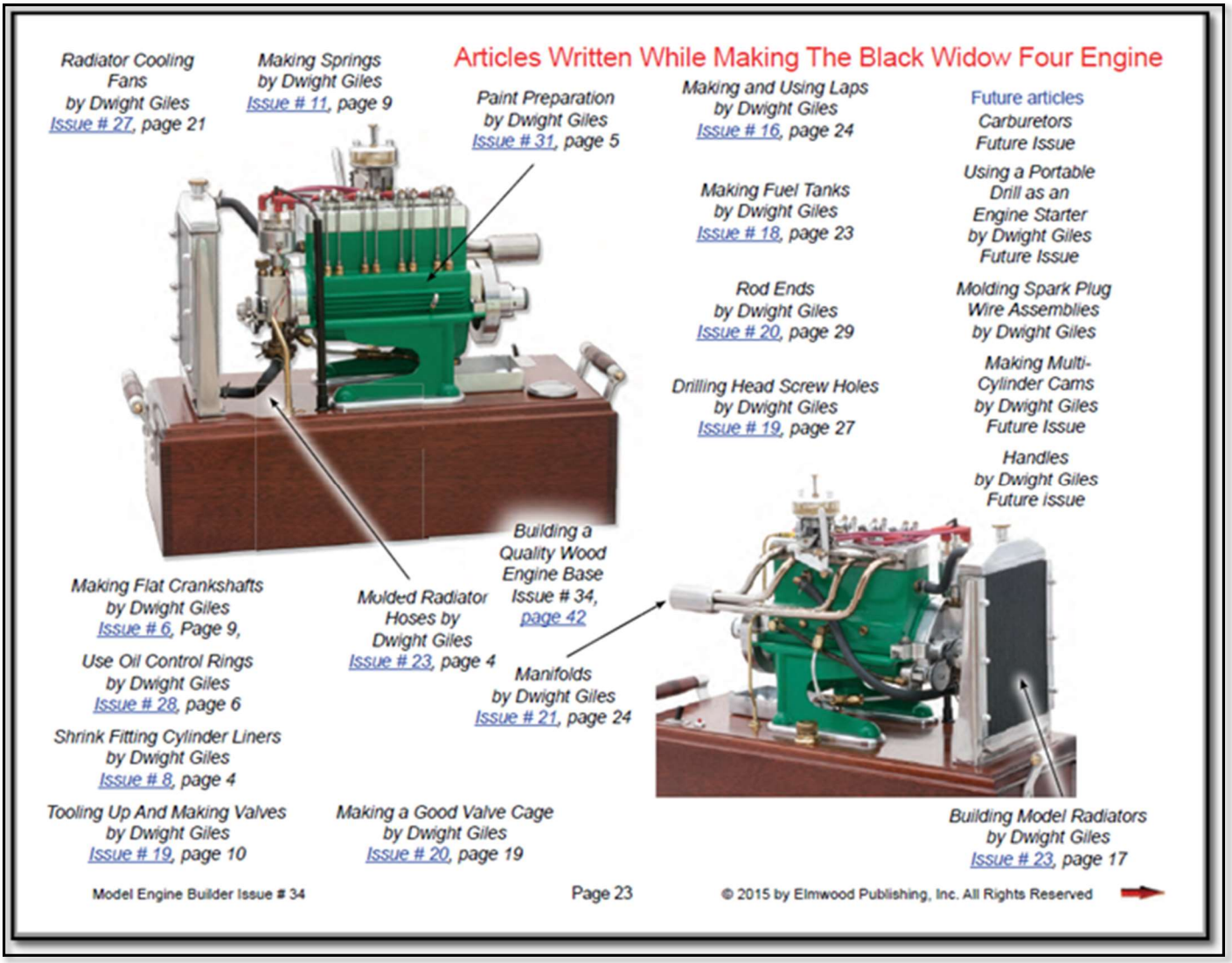
FIRST POPS

The Giles-Denham Black Widow Four has come alive! Paul got it running and provides proof. See and hear it on YouTube here: https://youtu.be/zxAzfByFATs

The Black Widow Four was based on the Black Widow V8, which was a joint project of John Vlavianos of Stockton, Ken Hurst and Dwight Giles. John Vlavianos, a retired Cal Trans engineer, worked during his retirement at the DeVecchio foundry in Stockton, where he designed and cast the castings for the Black Widow V8. John also partially designed and cast the castings for an inline 4 version, the Black Widow Four. John passed away in 2008, leaving the Black Widow Four project unfinished. Dwight Giles worked out the plans from the castings and completed the design and construction of the original Black Widow Four.

Dwight's original Black Widow Four was the featured centerfold in issue 34 of *Model Engine Builder*, which is, of course, the magazine of BAEM member Mike Rehmus.

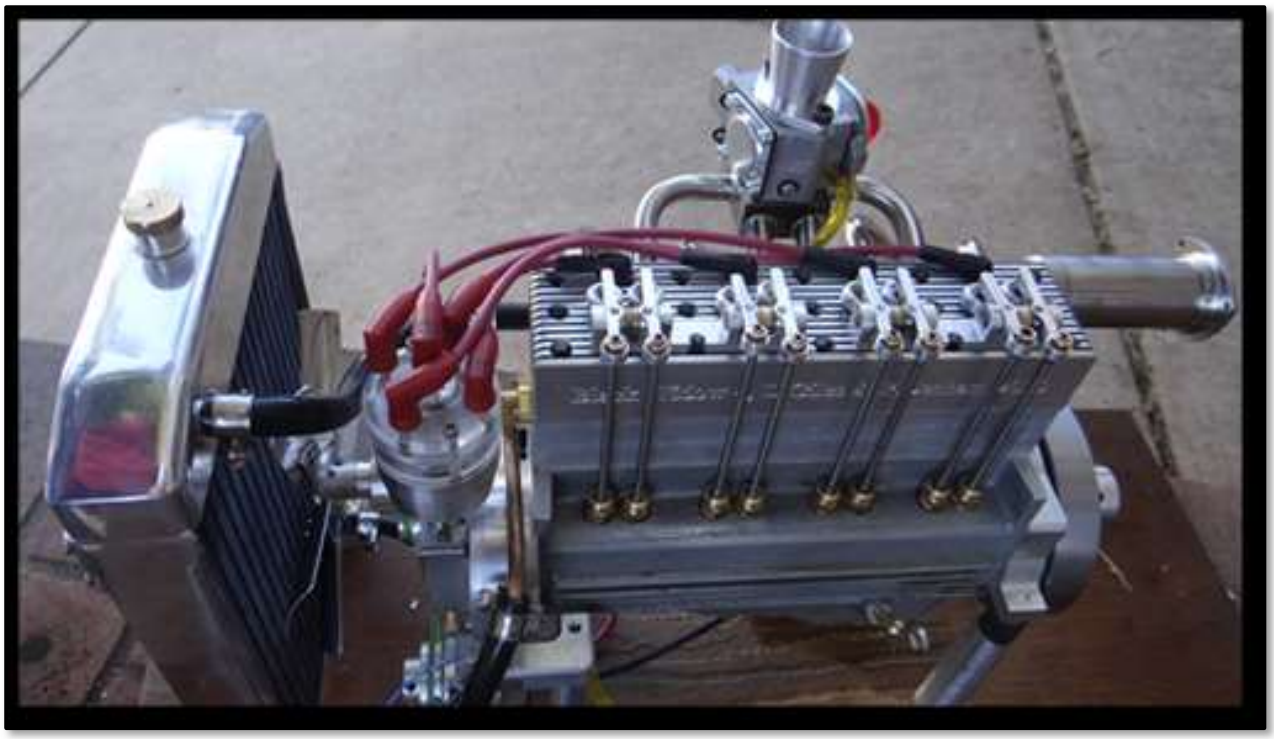
Issue number 34 of Mike's magazine, Model Engine Builder (www.modelenginebuilder.com) devoted its centerfold to the original Black Widow Four, constructed by Dwight Giles.



MEB #34 also included a helpful graphic that referred readers to many of the articles by Dwight Giles, devoted to the fabrication of a wide variety of specific engine components.

Model Engine Builder magazine is a valuable resource for the model engine builder. Every issue contains a set of full-size shop drawings. Over the years, it has covered every aspect of model engine construction. In particular, the Giles-Rehmus collaboration is a model-builder's gold mine, as can be seen in the listing above. Back issues are available at www.modelenginebuilder.com.

The Giles-Denham Black Widow Four



The exposed valvetrain provides visual interest, especially while the engine is running, the pushrods pushing and the rockers rocking. Clean design and flawless fabrication. Note the custom-molded plugs on the ignition wiring, the clear Lucite distributor cap, and the elegant ribbing of the cylinder head.
Model engine excellence, to be sure.

Paul Denham and Dwight Giles have now constructed the latest version of the Black Widow Four. There were only partial drawings. Paul worked by taking measurements from Dwight's original, utilizing a number of parts supplied by Dwight, and applying his own design skills along the way, in addition to his obvious high-level machinist skill set.

Engine

The Black Widow Four is an inline four-cylinder, four-stroke, pushrod activated overhead valve, water-cooled, naturally aspirated engine. Bore is 1.0625"; stroke is 1.000". Displacement is 3.55 cubic inches.

Block/Pan/Crank

The cylinder block and oil pan were fabricated from aluminum castings obtained by Dwight from the DeVecchio Foundry. Cast iron liners were pressed in to form the cylinders. The crankshaft was machined from a bar of chrome-moly steel.

The custom radiator is a work of art. The vertical rods are made from chrome-plated bicycle spokes.

Head

The head was machined from 2024 aluminum bar stock. The valves are straight vertical, inset slightly to ensure clearance. Bronze valve cages were pressed in. Valves were fabricated from drill rod. The cam was also fabricated from drill rod: only the lobes were hardened, to retain the ability to straighten the camshaft to get it running true. To ensure accurate valve timing, the cam was driven via fabricated gears between crank and cam.

Intake and exhaust headers were made from stainless steel thin-wall tubing, mechanically joined and sealed with heat-resistant "O" rings rather than gaskets.

Carb/Fuel

The engine uses a single-barrel carb sourced from weed-eater parts obtained by Dwight. The venturi is only 6.8 mm. Paul tried a larger size but was unable to get the engine to run satisfactorily. Fuel is supplied by a low-pressure electric fuel pump.

Ignition

Paul constructed an updated version of the Gedde-Sage IGBT (Insulated Gate Bipolar Transistor) ignition detailed in MEB #34, adding some minor design changes. The circuit is activated by two magnets embedded in the flywheel, sensed by a Reed switch, which provide 4 sparks per 720 degrees of crank rotation. Spark is directed appropriately via a beautiful clear Lucite distributor. Paul shrunk the circuit board by using surface mount components.

Cooling

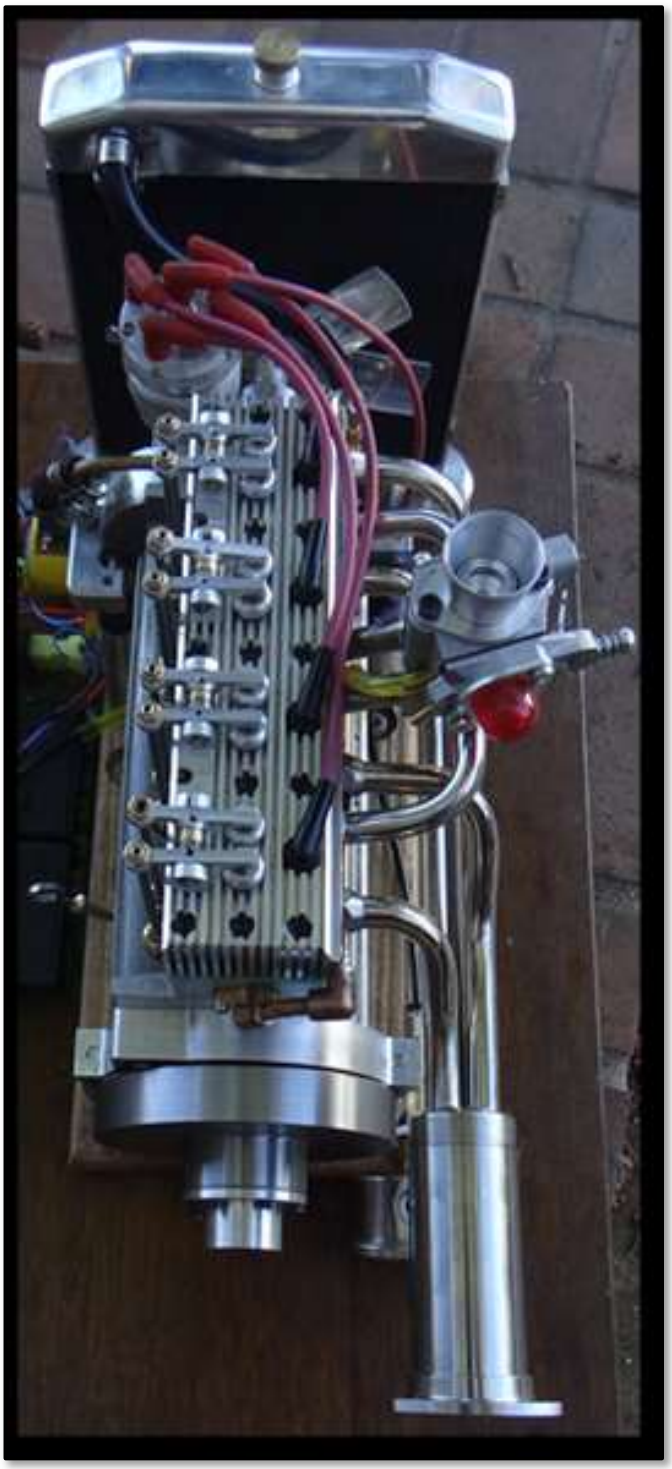
The engine is water-cooled. Paul fabricated a radiator that is a work of art. The water pump is pulley-driven from the crank via a polyurethane belt, which also drives the oil pump.

Starter

For starting, Paul will rely on an electric drill using a one-way clutch bearing, as is commonly seen in BAEM club engines.

To Do

The main remaining task is fabrication of a nice mounting box. Also, some painting and metal polishing is still needed to make it show-ready. The Giles-Denham Black Widow Four isn't quite completed yet, but it's clearly going to be a work of art when done. We look forward to seeing it in final form.



The intake/exhaust tubing is made from thin-wall stainless steel, carefully bent and polished.

BITS AND PIECES

Got some to share? Tell us about it so we can include it in next month's Crank Calls.

RAMBLINGS

Haven't heard any this month. If you have some to contribute, send along.

TECH TOPIC

Tech Topic guru Mike Byrne shares his thoughts regarding simple steam engine projects. It is attached.

FOR SALE

BAEM member Alan Aldrich is shutting down his very complete home workshop. Selling everything at bargain prices. Here's a list of the major items:

Hit & Miss engine - $400
Band saw - $800
Bead blaster - $600
Metal brake - $300
KBC mill -$4200
Drill press - $200
Hydraulic press - $175
Enco lathe - $2000
Bridgeport surface grinder - $800
Miller towable big 40 welder - $1500

Contact Al by phone at 925-827-4195, or by email at: 28closedcab@astound.net

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Dwight Giles has some stuff he is offering:

-Castings & Drawings for Örkenrud 340 V8. This is the same casting kit Wes is using for his build. Price is $100 donation to club.

-1.5 hp electric motor. 1750 rpm. 110/220v AC single phase. Heavy! Price: Free!

-Engine Mount Box. Beautiful wooden box for mounting your larger engine. Perfect for a Black Widow V8. 3 available. Price is $200 donation to club.

Contact Dwight at jig313@aol.com
or phone: 707-648-1481

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

NEWSLETTER CONTRIBUTIONS

In the past, this newsletter largely focused on reporting about the most recent BAEM club meeting. With our meetings being somewhat inconsistent due to Covid regulations, we need appropriate content to include in upcoming newsletters. Workshop reports, tech articles, reviews, historical pieces: you contribute, we'll figure out how to post it. Send your contributions to either or both of us. Thanks!

-Mike Bryne at mgbyrne3@comcast.net
-Wes Wagnon at weswag@ix.netcom.com

Bay Area Engine Modelers

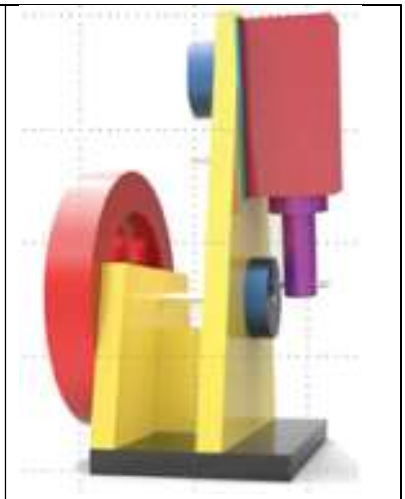
Virtual Technical Topic

Beginner's Steam Engine Projects

Mike Byrne - February 2021

Wes and I were wondering how to create content for Crank Calls in the absence of BAEM meetings. Wes sent out an email request, and I offered to write up a short article on shop motivation. As a Covid shut-in, I'm finding it harder to get out in the shop (which seems) counterintuitive. My strategy was to pick a project with fewer challenges like getting valve seats to seal. Simple air power steam engine models looked like a way to quickly get an engine running. This Virtual Tech Topic will explore many of the options available to those interested in following this path.

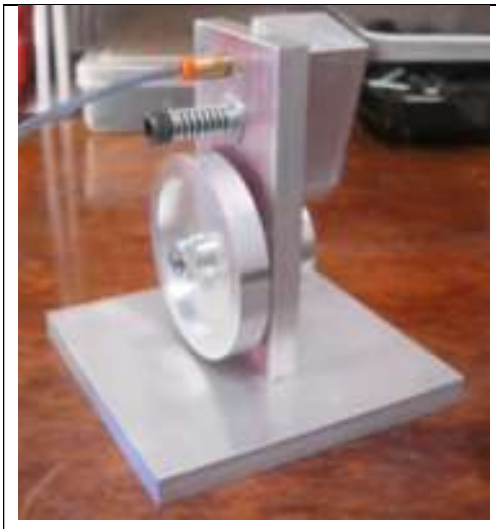
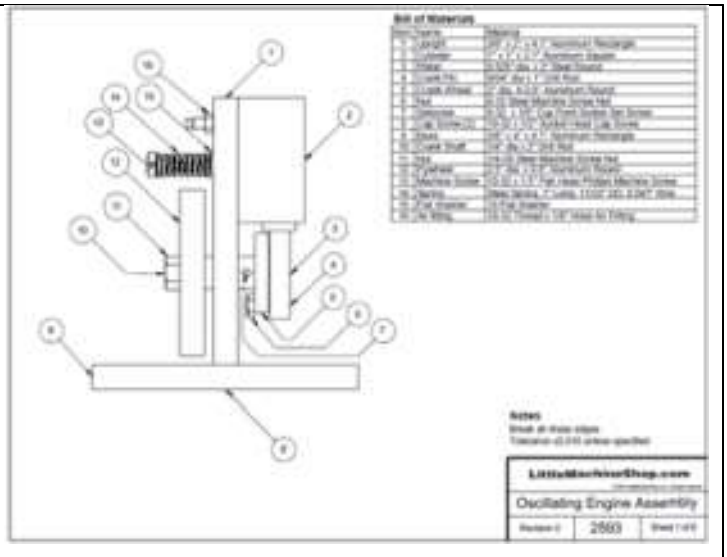
The simplest designs are called "wobblers." They operate without valves, by using a port in the oscillating cylinder as intake and exhaust. *Model Engine Builder* magazine has several wobbler build projects, some of which may be a little eloquent for my KISS (keep it simple, stupid) selection criteria. Examples snipped from the digital pages of MEB (thanks Mike Rehmus):

		
David II Wobbler *MEB Issue #1*	*Beaker's Show Wobbler* *MEB Issue #21*	*Wooden Wobbler* *MEB Issue #24*

BAEM's YouTube Channel:
https://www.youtube.com/channel/UCZ7VbDw_y0GtNm1n6KWiQkg

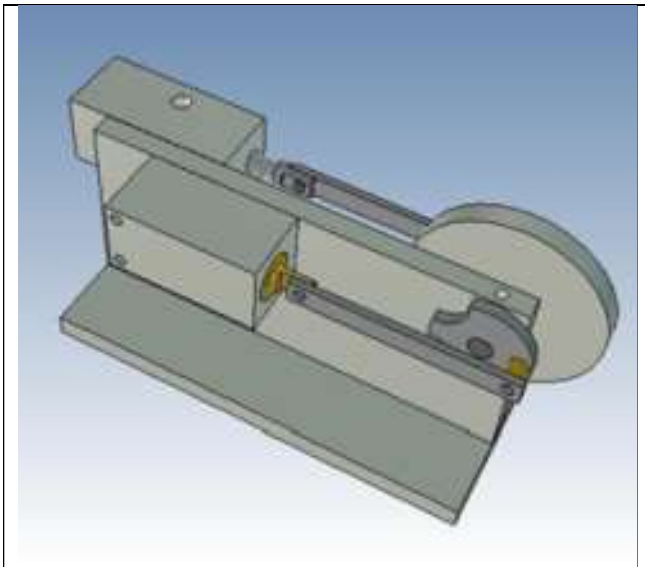
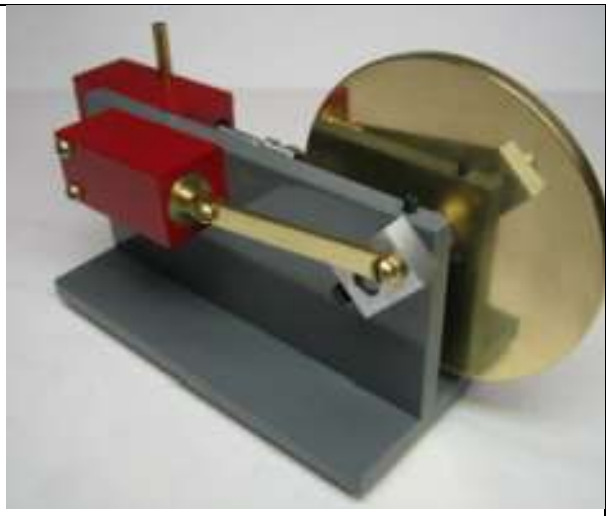
	
Finney's Wobbler *MEB Issue #29*	*Dwight's version of Finney's Wobbler* *From MEB Issue #29*

In addition to the David II beginners' projects, I found two others worth mentioning. Little Machine Shop offers material kits with assembly instructions for a simple wobbler. Assembly video DVD is an option.

	
Little Machine Shop wobbler *(material kit #2594)*	*Littlemachineshop.com* *2593OscillatingEngineAssembly.pdf*

BAEM's YouTube Channel:
https://www.youtube.com/channel/UCZ7VbDw_y0GtNm1n6KWiQkg

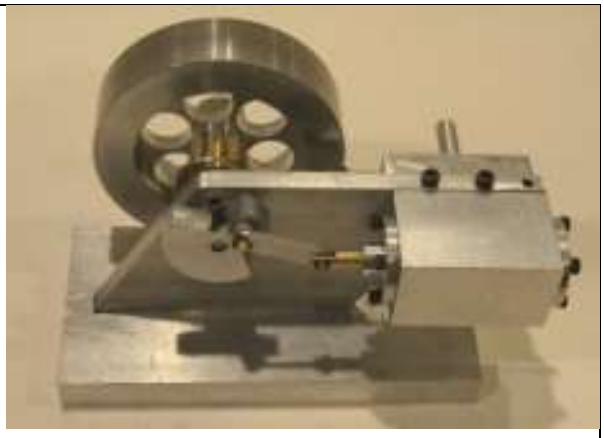
The *Home Model Engine Machinist* (https://www.homemodelenginemachinist.com) site has an EZ Beginners Engine project with drawings, bill of materials, and instructions. Note that this horizontal engine is not a wobbler. There are several build threads available on the forum.

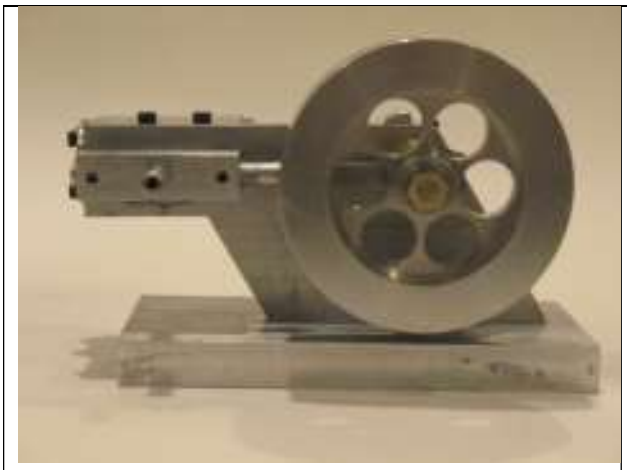
	
HMEM EZ Beginners plans and instructions	*Look on www.homemodelenginemachinist.com under Downloads for a zip file*

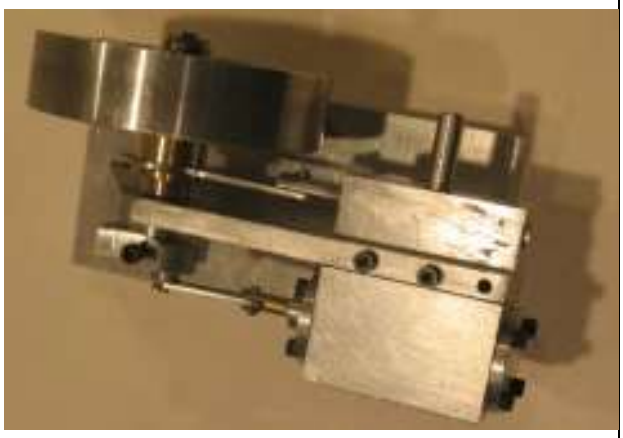
YouTube is also a resource. One prolific contributor is Lyle Peterson, AKA MrPete222 or TubalCain. He has created several model steam engine build videos for wobblers, vertical/horizontal, bar stock/shop made castings, and a Stuart Progress along with casting videos. I find them great how-to demos, but machining dimensions are often taken from his prototypes rather than drawings. He is often silent on alternatives to his castings as well. While writing this paper, I found a link for the vertical plans with a bar stock flywheel.

	
MrPete222 bar stock vertical with lead cast flywheel Plans at: *www.youtube.com/watch?v=hq53e5hljP4*	*MrPete222 "drill press only" Wobbler* *https://www.youtube.com/watch?v=jmsorELiJjc*

MrPete222's horizontal version caught my eye and I thought I could reverse engineer my own version. Snip below shows my work in progress; "first hiss" is expected soon.

	
MrPete222 cast horizontal *https://www.youtube.com/watch?v=tQT-oDTeTp8*	*Mike's reverse engineered horizontal (for bar stock) double acting spool valve*





More snips of work in progress

References for further consideration:

- *Elmer's Engines* by Elmer Verburg was published in 1988 and includes 52 steam engine designs, including #34, which was the weird Cross Twin that Paul built. You may want to search Google for a digital version rather than buy the Amazon offering for $300. I found a site that claimed to be an authorized distributor.
- *Model Stationary Engines* by H. Muncaster was first published in 1912 and reprints can still be found. This booklet has many engine drawings as well as design and scaling parameters useful to model engineers.
- Stuart Models (https://www.stuartmodels.com) offers a variety of model steam engine kits and castings. Of interest, there are a number of published books on building Stuart models as well as YouTube build videos on Stuart engines and others.

While not as impressive as the larger multiple cylinder engines many BAEM'ers build, the modest single-cylinder steam engines described here can be satisfying to build and make for entertaining display. This is a hobby, after all, and the rewards of satisfaction that arise from the build can be found in small projects like these. Enjoy!