

The NEMES NEW ENGLAND MODEL ENGINEERING SOCIETY INC. Gazette

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Club Business

Richard Baker

Next Meeting

Thursday, Sept 3, 2015 7PM

Charles River Museum of Industry
154 Moody Street
Waltham, Massachusetts

The speaker will be Professor Steve Chomyszak of Wentworth Institute, speaking on a unique fluid expander he developed, that consists of two intersecting toroids. He got funding to develop prototypes. There is some tricky design involved. He has a YouTube video describing it, FYI:
youtube.com/watch?v=yP4eMeaQc7M.

Membership Info

New members welcome! Annual dues are \$25 (mail applications and/or dues checks, made payable to "NEMES", to our Treasurer Richard Baker) Annual dues are for the calendar year and are due by December 31st of the prior year (or with application).

Deadline for submitting articles is two weeks prior to the next meeting.

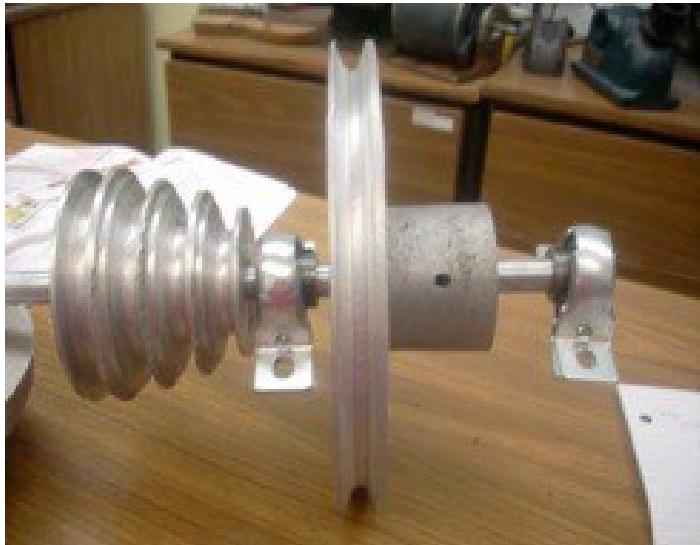
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Metal Shapers

Kay Fisher

R. G. Sparber's Gingery Shaper - Part 65 Casting And Machining An 8" Pulley



Finished Pulley Photo by R. G. Sparber

My 8" pulley pattern was made from a 3/4" thick piece of MDF and the hub from a previous pattern. The resulting hub is oversized but usable.



Drag Imprint Photo by R. G. Sparber

I have my variable volume flask set to maximum which means I'm using all 100 pounds of Petrobond. The drag

imprint came out clean. No touch up was needed. I did not use any gagers. This tiny URL will take you to an explanation of "gagers". <http://tinyurl.com/oltlatb>



Fall Out

Photo by R. G. Sparber

I cannot lift 100 pounds of sand so first moved the drag next to the furnace and then moved the cope. The cope is on edge when I cut the sprue. It is then moved on edge and rotated next to the furnace.

The lack of gagers became evident when I rotated my cope horizontally for final assembly. Fortunately I did it over a clean, empty tub. About 50 pounds of Petrobond landed. Very little Petrobond was lost.



Pattern in Drag Photo by R. G. Sparber

The pattern was put back into the drag and I rammed up the cope again. This time I used a lot more force. There

were no surprises this time and I was able to start my furnace.

I don't like to be rushed so don't start my furnace until at least one flask is safely positioned nearby. This costs me a few hours but this is a hobby and not production.

The casting took almost a full crucible of aluminum and the result was one serious hunk of metal.



Casting Side View Photo by R. G. Sparber

I chose to not taper the sprue since it had to feed that big hub.



Casting End View Photo by R. G. Sparber

You can see a small amount of shrinkage between the pulley and the bottom of the sprue.



Sprue Removed

Photo by R. G. Sparber

With the sprue cut off, you can better see the shrinkage.

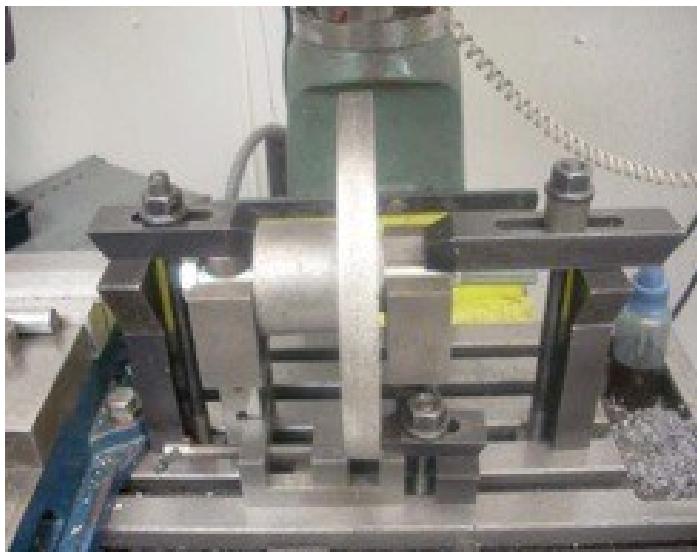


Chuck Mount Photo by R. G. Sparber

The next step is to decide how best to hold the casting in order to minimize cutting. Holding the hub is not such a good idea. You can see how much the disk deviates from true. With such a massive hub, the best approach is to use the face of the disk as my reference and bore through the hub with whatever offset results. I can cut a lot of this hub away and still be solid.



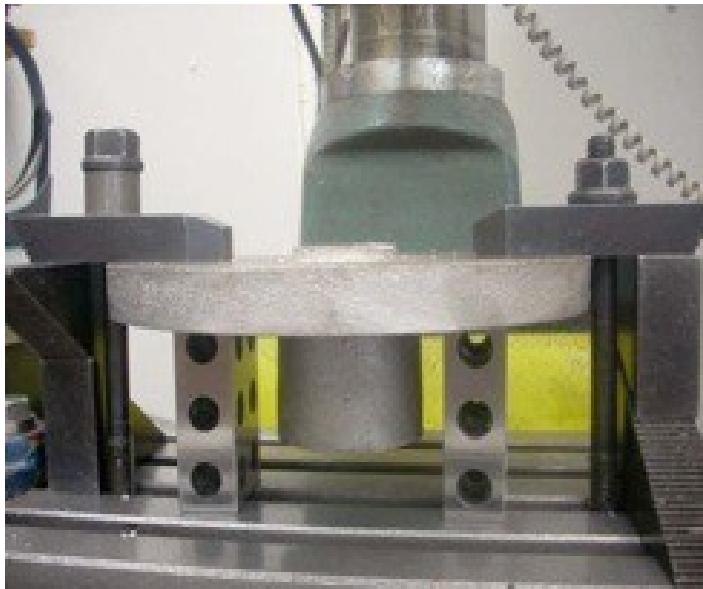
Chuck Jaws at Max Photo by R. G. Sparber



Drilling for Set Screws Photo by R. G. Sparber

My first idea was to hold it in my 3 jaw chuck but the casting was about $\frac{1}{4}$ " too large.

With the casting supported by a $\frac{5}{8}$ " diameter bolt on V blocks, I am about to drill and tap two set screw holes. The small vise prevents rotation as I drill. The holes are offset by 90° .



Casting Being Drilled Photo by R. G. Sparber



Lathe Setup Photo by R. G. Sparber

I could have bolted it to a faceplate but chose to put it on a mandrel instead. In hindsight, the faceplate would have been more solid.

I put the casting up on 1-2-3 blocks on the mill table. I scribed the center of the disk and am about to drill a $\frac{1}{2}$ " hole through the disk and hub. I then bored the hole to a sliding fit on a $\frac{5}{8}$ " mandrel.

The casting is now on the mandrel and run between centers. My lathe has 12" throw but that does not mean I can get a tool around it. This 8" disk was a challenge. A boring bar off to the side was able to reach the edge. Note that the cutter is upside down from a normal boring bar but right side up for this arrangement. I started at 49 RPM but found that 70 RPM worked better. Before starting the lathe I realized the cutter was too small so switched to a larger one.



Cutting V Groove

Photo by R. G. Sparber

My first pass was a plunge cut down to 0.490". Then the tool post was turned 17° and one side of the V groove cut. Next the tool post was turned to -17° and the other face was cut until the width was right.

That plunge cut was a nasty task. The $\frac{5}{8}$ " mandrel was not strong enough so there was some deflection. I often dug in and stopped the lathe. Sometimes the motor would run but the set screws didn't hold. This scored the mandrel. I learned how much I could push without wasting my time and not jamming the lathe.

When I tried to remove the mandrel, I found that it was solidly stuck. I solidly supported the casting and started tapping on the mandrel with hammers. Even my hand sledge only produced a little motion. I decided to cut off both ends of the mandrel and drill a $\frac{1}{4}$ " hole through the center to weaken the rod. This wasn't enough so I chased this hole with a $\frac{3}{8}$ " drill.



Mandrel Removed

Photo by R. G. Sparber

Using a drift and my hand sledge I was able to finally eject the remnants of the mandrel.

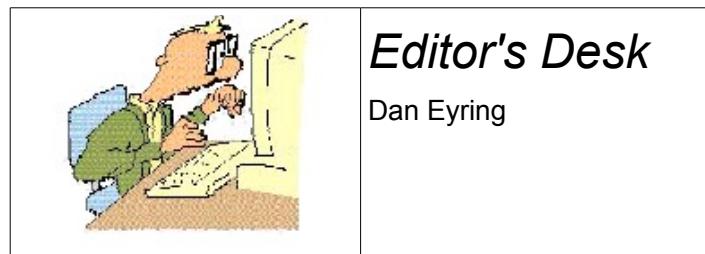
I drilled the hole with a hand held drill and you can see that I blew out on the end. I also broke out a small amount of aluminum on the casting. Otherwise, the casting survived.

A second casting will be used for a combination flywheel and hand wheel. I only need to round the edge so will probably go with a mandrel again.

Stay Tuned for part 66 from R. G. Sparber next month.

Keep sending me email with questions and interesting shaper stories. My email address is:

KayPatFisher@gmail.com



Editor's Desk

Dan Eyring

As your new editor I would like to thank Errol Groff for handling the Gazette for the last few months and George Gallant for helping me get started. I would also like to repeat below Error's plea for help from the NEMES membership in making the Gazette a better and more useful read for all of us.

"I will start off by asking for your contributions to the Gazette. As has every editor before me for any group that ever existed. Or ever will exist! One person can't do it all and, indeed, it would be pretty boring if he tried. This is YOUR Gazette and will be all the better for your participation.
Errol"

And in that spirit, Errol has offered up an item sure to be of interest to us all. I have put the item's description below in a section I call (for now) "Great Opportunities". I'm sure someone has a better name in mind, just let me know!

!!!Great Opportunities!!!

Have you stumbled on a great deal, a terrific museum or exposition, or maybe just a new shop technique or product? Well, here's the place to tell the rest of the NEMES membership about it.

Kay Fisher forwarded the following message from Henry Rogers of Newbury MA:

From: Henry Rogers <hhrogers35@comcast.net>

Date: 11-August- 2015 at 10:02:21 AM MST

To: KayPatFisher@gmail.com

Subject: Shaper

Dear Mr. Fisher,

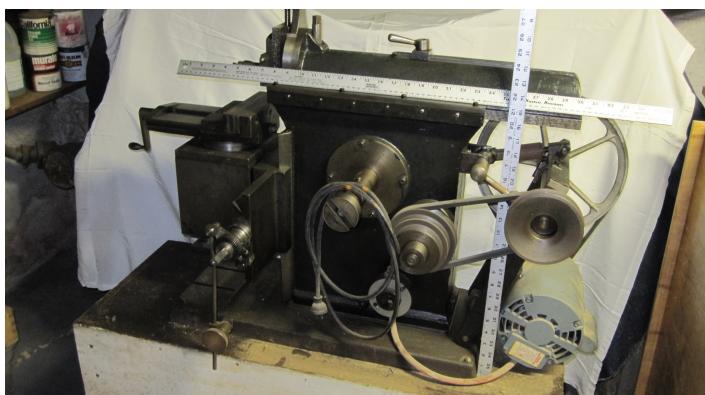
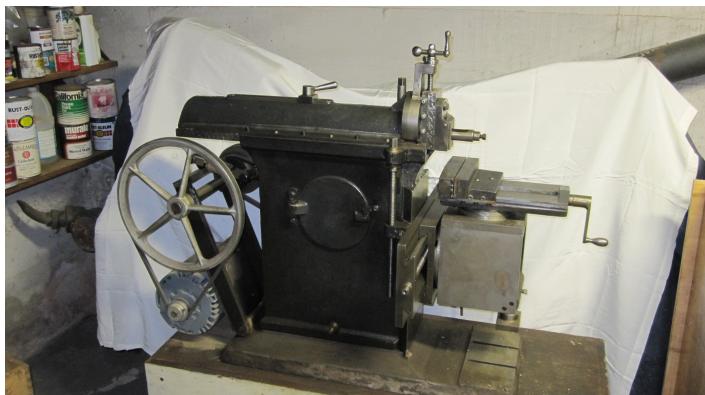
I have a small shaper that was built as an apprentice project at the Portsmouth Navy Yard by a man named Fred Pratt (deceased). It is in beautiful shape. If you know anyone who would be interested in this machine, please let me know.

Henry Rogers

4 Green Street

Newbury, MA 01951

978-462-2773



Upcoming Events

Errol Groff

To add an event, please send a brief description, time, place and a contact person to call for further information to Errol Groff at:

events@neme-s.org

Sep. 4-13 Lee Mills Steamboat Meet
Moultonborough NH

Contact:

David Thompson
PO Box 175, Moultonboro NH 03254
(603) 476-2224

Sep. 9-18 John W. Brown visit to New London CT
One of the last two operating World War II liberty ships will make an extended visit to New London next fall as part of the Connecticut Maritime Heritage Festival.
Contact:

info@liberty-shipnewlondon.info or
CMHF2015@gmail.com
<http://ctmaritimefest.com/about/>

Opsail Connecticut Inc.
239 Bank Street, New London, CT 06320
860-447-2519

Sep. 12-13 4th Annual Daniels Farmstead Truck and Tractor Show and Swap Meet
Blackstone MA

286 Mendon St., Rt. 495 to Rt. 16 to Main Street, right on Blackstone Street, which turns into Mendon Street.

Contact:

Gary Smith
PO Box 351, Mendon, MA 01756
774-573-0418
garyxsmith@comcast.net

Sep. 11-13 Fall Engine & Steam Show
Granite State Gas & Steam Assoc.
Dublin NH

Held at Cricket Hill Farm, Just off State Route 101, East of the town of Dublin, NH.

Contact:

Dublin Gas Engine Meet
75 Craig Road,
Dublin, NH 03444

<http://dublinnhgasenginemeet.com/gas-engine-shows>

Sep. 13 Yankee Yesteryear Car Club Annual Car Show
Brooklyn, CT
Brooklyn Fair Grounds Rt. 169
Contact:
Chairperson Francis Duquette 860-923-2781
fdquette@snet.net
<http://www.yycc.org/YYCC%20Flyer%202015.pdf>

Sep. 12 - 13 Rhode Island Military Vehicle, Antique Truck and Tractor Show
North Kingstown, RI.
2 Callahan Rd.

Contact:
M371953@hotmail.com

Sep. 19-20 35th Annual Show Tobacco Valley Flywheelers Gas and Steam Engine Club
Haddam CT.
Haddam Meadows State Park, Rt. 154
Contact:

Russ Bengtson
646 Bear Hill Rd., Middletown, CT 06457
860-347-5774
www.oldengine.org/members/tvf

Sep. 20 Norwich Auto Show
Norwich, CT
Dodd Stadium, 14 Stott Ave. Norwich, CT
Contact:

860-887-1647

Sep. 25-27 31st Anniversary Connecticut Antique Machinery Assn. Fall Festival
Kent CT
1 mile north of Kent on Rt. 7
Contact:

Jim Daly
PO Box 425, Kent, CT 06757
860-354-1859
camainfo@ctimachinery.com www.ctimachinery.com

Sep. 27 Old Colony Model RR Club 15th Annual Show
Taunton MA
Taunton Holiday Inn, Route 495, Exit 9
Contact:

508-285-3963
contact1@ocmrrc.com

