

The NEMES Gazette

The Newsletter of the New England Model Engineering Society

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The Editor's Desk

Mike Boucher

Next Meeting

Thursday, October 3, 2002

The Charles River Museum of Industry
154 Moody Street
Waltham, Massachusetts

SPECIAL NOTE!!!!

The next meeting will not be held in the usual room. We are meeting in the Appleton Room. To get to the Appleton Room, walk towards the museum over the footbridge as usual. The Appleton Room is just before the main museum entrance, where you see the tables and umbrellas.

Annual dues of \$25 covers from Jan to Jan. Please make checks payable to NEMES and send to our treasurer. (Address in masthead).

Missing a Gazette? Send mail or email to our publisher. (Address in masthead).

A few months ago, I started a new job in North Chelmsford. Driving to work from my old apartment, I would pass a mill building converted to office/retail space. There is a large flywheel sitting outside along the street, and a smaller one built into the sign. This brought back a memory from more than a few years ago. My uncle, who lives in Chelmsford, took my father and I to see a stationary steam engine on display at a restored mill building. It was long enough ago that I didn't remember exactly where it was, but I thought this building held some promise.

One day after work I decided to see if this was indeed the building I visited before. I pulled into the driveway, and went to the first public entrance. I walked in, and down a few steps in the lobby was a larger engine than I remembered, nicely cosmetically restored.

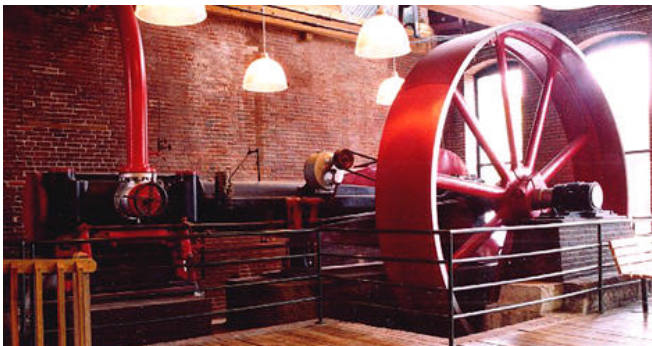
The engine was built by C.H. Brown, of Fitchburg. I couldn't read the size nor number on the builders plate. The bore looks to be in the 14"-16" range, and the flywheel is around 18'-20' diameter.

The valve gear is very interesting, there are two piston valves at each end of the cylinder, the

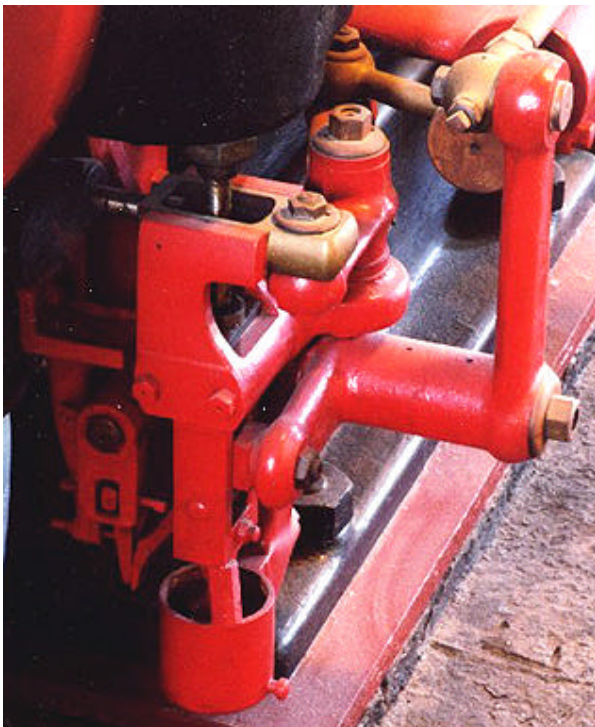
exhaust valve is horizontal at the bottom, and the intake is vertical. What makes it really unusual is the valve chests are in line with each other, so the valve rod for the exhaust passes through a rectangular slot in the valve rod guide for the intake valve. There is no obvious reversing gear. I can't say I know what this valve configuration is called, I've never seen anything like it before.

A bonus feature I didn't remember is that there are quite a few pieces of the belt shafting still in place, some up the stairs in the lobby and others were visible through the window of a wallpaper shop.

Here's a few photos of the engine and valve gear. I'll try to bring more to the October meeting.



C. H. Brown engine photo by Mike Boucher



C. H. Brown valve gear photo by Mike Boucher

Sometime I'll have to write up a longer article on the engine, with more photos. If you're interested in seeing this engine, it's at "The Mill", which is on route 4 between the Drum Hill rotary and route 40. It's next to the Boston & Maine railroad main line.

Color!

With a lot of effort from our publisher Bob Neidorff and some luck, this issue of the Gazette will contain some *COLOR* photos! Kay Fisher's shaper column has some photos of a first class restoration. The paint-work is just too good to print in the low resolution black and white the photocopier provides.

Of course, those of you who receive the Gazette in PDF format over the internet always see color photos. If you're on the internet, you really should consider getting your copy this way. The photos are better, and you get it quicker, so you can take advantage of good "for sale" ads.

Moving!

Here's a reminder about my new address:

Mike Boucher
 10 May's Field Rd
 Lunenburg, MA 01462-1263
 (978) 345-7741

C'ya
 Mike



President's Corner

Norm Jones

The Meeting

Our speaker for October will be Joe Howard. Joe was originally scheduled to speak at the June meeting. Joe is a professional model builder and painter. He will be bringing an R/C helicopter and will be giving us an idea as to the technology incorporated in building them. I will be especially interested in learning about his finishing techniques. Joe previously worked as a painter in

the auto body field. This should be another great meeting.

North Shore Old Car Club Display

Thanks to Ed Rogers for arranging for our exhibition area on Sunday, September 8th. Around a dozen of our members got together under a very spacious canopy, complete with tables, chairs, and even electricity. We enjoyed a steady stream of curious spectators who seemed to enjoy our various projects. Todd Cahill and Dave Osier were first time participants this year. I gave an interview on the "Sweet Chariots" radio program on WBIX AM 1060, which was being broadcast live from the show. You never want to pass up an opportunity to put in a plug for our organization. It would be interesting to hear if any of our members happened to be tuned in.

Dick Boucher invited us to stop over to see his shop after the show was over. It's always enjoyable to go on a shop tour. Thanks Dick! I am sure that Dave, Roland, and Todd would agree with me that we had a great time.

Upcoming Events

The New England Wireless and Steam Museum Yankee Steam-Up will be held on October 5th. Some of our members are quite active in that organization. A number of years ago while attending that show, I overheard it referred to as "Rhode Island's best kept secret". Spread the word, it is truly an outstanding event! Exhibitors are encouraged to register in advance. Phone (401) 885-0545 or FAX (401) 884-0683.

Another very popular annual event is a bit earlier than usual this year. The Shop Visit/Swap/Get Together at Roland Gaucher's shop, in Spencer, MA, will be held on October 6th.

M.I.T. Haystack Observatory, in Westford, MA, will sponsor a program on October 8th at 6:30 PM. There will be an "Introduction to Haystack" as well as a tour of the Radio Telescope. You need to call Susan Davis or Janet Dutton at (978) 692-4764 by October 1 to make a reservation.

See you on October 3rd.

Norm



The Meeting

Max ben-Aaron

October meeting

The October meeting was called to order by the Venerable Norm Jones. Venerable founder, Ron Ginger was again conspicuous by his absence; he seems to have been cured of his addiction to NEMES, one meeting at a time.

On behalf of all the members, Norm extended a warm welcome to a distinguished guest, Peter Verbree, who was visiting from Sudbury, Ontario. Peter provided the story of rebuilding his Alba shaper, which has been serialized in the Gazette for the past few months. Norm also welcomed several new members. He noted that just as he was leaving work tonight, he got an e-mail from a lady who wanted to know how to join NEMES. If she does join, she will be our first female member, and it's about time. (This does not mean that we love our loyal Ladies Auxiliary any less).

Thanks again to the members who performed the vital function of manning the front door before the meeting.

During his excellent talk last month, David Bono mentioned that he will make professionally drawn plans for his sheet-metal folder available to the Club. Members will be able to purchase a copy for \$10. All proceeds go to the NEMES treasury. [Editors note: Non-members can also purchase the plans. See the For Sale listings for more details]

Norm gave an update on his aluminum-welding project, using aluminum welding rod he had for a long time, to repair a lawn-chair. Initially it was unsuccessful, so a friend suggested that he should try making a puddle of aluminum from the

rod and the base metal and stirring it with a stainless steel rod. This did not work either.

Then he went down to a show in Pennsylvania where he encountered a fellow selling aluminum welding rod. This chap had the traditional display of welding beer cans together and all the usual paraphernalia. Norm explained the problems he had and the techniques he tried. "Oh no", he was told "you don't need to do anything like that. Just brush the base metal with a stainless-steel brush, and heat the base metal. When it gets hot enough, apply the welding rod and it just goes together. No flux needed."

Norm bought even more rod and tried his method. Now his supply should last four lifetimes! Believe it or not, he used a propane torch and this new method worked. He doesn't know how long it will last, and isn't planning on bringing the chair to a machinery show just to have someone sit down in imminent danger of falling through.

Norm mentioned again that we have a library with a collection of books, magazines, VCR tapes and whatnot. These are available to members to sign out and take away until next meeting.

Norm encouraged members to come to the North Shore Old Car show. He mentioned how much fun it is. He sets up at the Middlesex County 4-H Fair every year and has a wonderful time. Last time he exhibited a Hero's Fountain. At the end of the day he is tired but exhilarated.

It is not too early to start planning for the Cabin Fever Show. It is in a new and even better venue this year in York PA, with a pond for boat enthusiasts. There is only one hotel that has a restaurant facility and they will have a function room available for evening meetings. We are planning on reserving some rooms there.

The Annual shindig at Rollie Gaucher's shop is on October 6th this year. There are flyers with directions telling how to get there without falling off the end of the world. It is an event not to be missed.

Also coming up, the show at the American Precision Museum in Windsor Vermont. This show does not seem to have grown, as some of

the others have. They are probably counting on us to put up a good show.

Show & Tell

Bill Schoppe collects plumb-bobs. A fellow who did post-and-beam construction showed him a 'plumb level' so he decided to make one from scrap lumber and brass. It is basically a wooden arch with a plumb-bob hanging down from the highest point. When the point of the bob is over a fiducial mark, the base is level.

Ed Borgeson has a 1/2 HP 220-volt/110-volt single-phase motor free to the first applicant.

Alan Bugbee showed a kaleidoscope he made. He needs some ideas on how best to make the part on the bottom that turns the pattern. He has a book that suggests putting an optical system in it, but it does not give any details. If you know how to do it, please see him.

Larry Keegan showed a small 110-volt compressor and a compressed-air tank that could be useful for running a small engine.

The North Shore Old Car Club Show

The usual suspects (Norm Jones, Dick Boucher, Ed Rogers, Herb Cotter, Rollie Gaucher, Jeff DelPapa, Max ben-Aaron) and new inclusions this year, Dave Osier and Todd Cahill, exhibited and a good time was had by all. It was unanimously decided (by Dick Boucher & Mb-A) that, like the Masons have titles such as "Most Worshipful" for their leaders, henceforth the President of NEMES shall have the title "The Venerable".

The Speaker

The night's speaker was Michael Garbenis on "Simple, effective, inexpensive EDM Equipment".

Michael is an electronics technician who works for a company that produces interface probes for ATE (Automatic Testing Equipment). He does a lot of research & development with the engineering staff to produce the machines that make the products. His hobbies include woodworking, photography and knife-making.

As a knife-maker, he likes to put his logo on his knives. The usual methods include etching and stamping. Michael tried chemical etching, which is fast and easy, but he found that penetration was poor, especially for stainless steel. For greater penetration he tried masking and bead blasting. This technique requires a very sturdy stencil. Stamping needs an expensive punch and die, especially for his logo, which is a detailed eagle.

At work, a Wire EDM and a hole popper were routinely used for electrically cutting, shaping, and finishing processes to make in-house tooling. This technology would offer excellent penetration and good detail, but the equipment is expensive, requiring stepping motors and complex electronics.

He observed that the work is submerged in a dielectric (which can be a non-conducting liquid of some sort) and a potential is applied to between an electrode (suspended a short distance above the work piece) and the work piece itself. The electrode is moved towards the work piece until, at some point, the dielectric ionizes and a little blue spark jumps the gap. The process reminded him of arc welding with control of the arc being several orders of magnitude better.

The spark creates a vapor bubble due to the discharge of electrical energy eroding the work piece at the point of discharge, forming a little crater. The electrode is then withdrawn and advanced until another spark is generated making another crater. If the electrode has a pattern on its end, that pattern will eventually appear on the work piece.

So Michael, noticing that all he needed was a single-axis machine, decided to invent a cheaper alternative to EDM. To explore the concept, he borrowed a linear servomotor from work, and built a simple apparatus in which the servo was tuned so that the sparking sounded like a continuous sizzle. He used kerosene as the dielectric and a piece of carbon as the electrode. It worked, even though errant rotation was an issue.



Razors with logo EDM'd in.

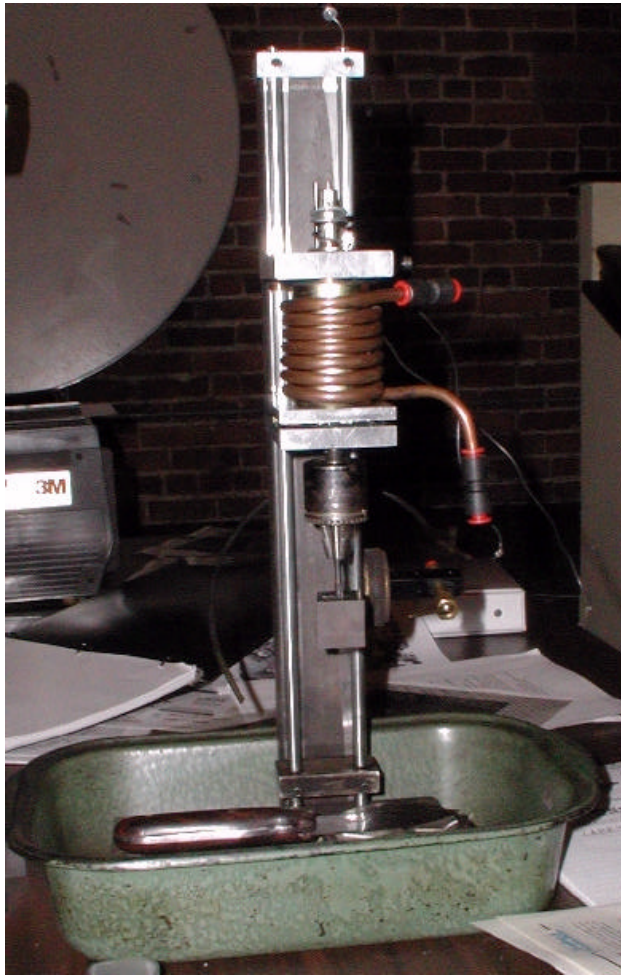
The linear servomotor system is costly (\$1200-\$1500 not including a lap-top or other PC to provide control sequences) so Michael then explored less expensive alternatives.

A voice-coil was just as expensive and he found nothing that would cost around \$150 (1/10th the cost of a servo).

In a surge of creativity he realized that a generic solenoid could simulate a cheap voice-coil if he

- ?? Installed a return spring
- ?? Trued up the plunger and designed a bracket system with bronze bushings to yield a centerline for the axis
- ?? Added an anti-rotation scheme for the precise control of non-round electrodes.

He used solid-state circuitry to drive the solenoid, without expensive servo amplifiers. In addition he eliminated the DC sustained arc with with a current-limiting load resistor (actually a 500 W quartz halogen lamp as a "flux capacitor". As the element heated, the resistance increased, limiting current flow further) and sized the filter capacitor for the type of burn finish desired.



Mike's EDM Machine

Experiments showed that different dielectric mediums had different characteristics:

1. Water and kerosene are good for brass.
2. Graphite electrodes only work with kerosene.
3. Tungsten electrodes, in conjunction with kerosene work well on carbide.

A friend, who has a graphic controlled router for making plaques, made some graphite 'electrodes' for him. This worked well, as evinced by the knife he showed with his eagle logo put on it with his prototype apparatus. This should be good for quite a few logos. Then he will get another die made...

He hopes to patent the device. The application that immediately springs to mind (but not limited to) is a simple inexpensive device, using plain round carbon electrodes (gouging grade) to burn broken taps/bolts out. I'd love to have one.

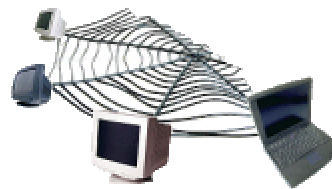


Treasurer's Report

Rob McDougall

As of August 31, 2002:

Balance as of: 7/31/02	\$5,217.69
Dues Received	37.50
Interest Income	.65
<i>Less</i>	
Gazette expense	-182.54
Balance as of: 8/31/02	\$5,073.30



Web Sites of Interest

"Backyard Ballistics"

Everything from potato guns to trebuchets. Kids - try this at home at your own risk!

<http://www.frii.com/~bsimon/backyard.html>

Florida Association of Model Engineers

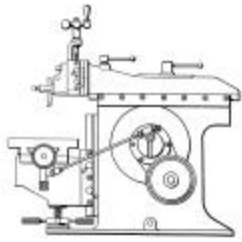
Similar club, just further south!

<http://www.floridaame.org/>

Specifications For American Lathe Spindle Noses

Get the dimensions for the spindle on a lot of different lathes.

<http://shopswarf.orcon.net.nz/chuckmt.html>



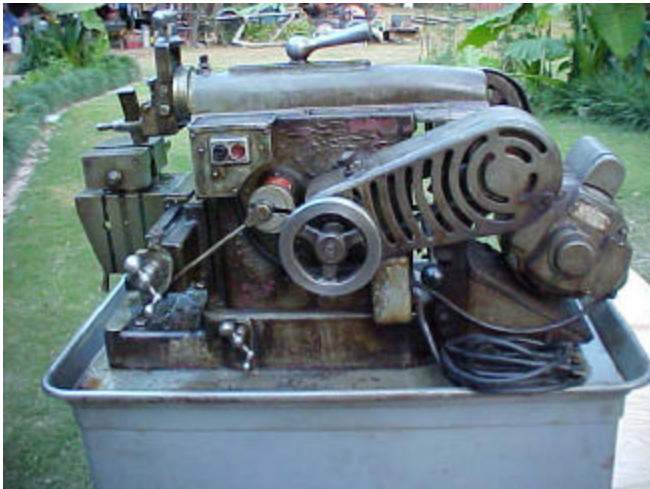
Shaper Column

Kay Fisher

Shaper of the Month – South Bend 7”

Joe Guidry, from deep in the bayou country, south Louisiana, sent me this story of rebuilding a 7” South Bend Shaper, along with some great pictures.

Joe acquired this shaper in a crate from the Grand Tool Company, who Joe says are fine people to do business with.



South Bend – Before

Photo by Joe Guidry

He took it completely apart the day he received it. He then cleaned, polished, glass bead blasted, primed, painted, rewired and put it back together. He had to make some knobs and replaced all the oil filler drip caps.



South Bend 7 Inch Shaper

Photo by Joe Guidry

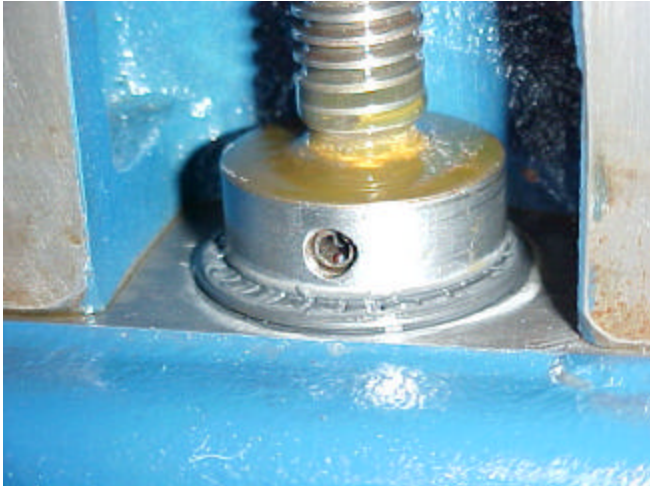


South Bend Cabinet

Photo by Joe Guidry

He also put a thrust bearing under the shaft that raised the column. Joe says this really help cut down on the drag.

while the men were fighting to protect the home land.



Thrust Bearing on Column Photo by Joe Guidry



Cincinnati 24" Shaper Photo by Joe Guidry

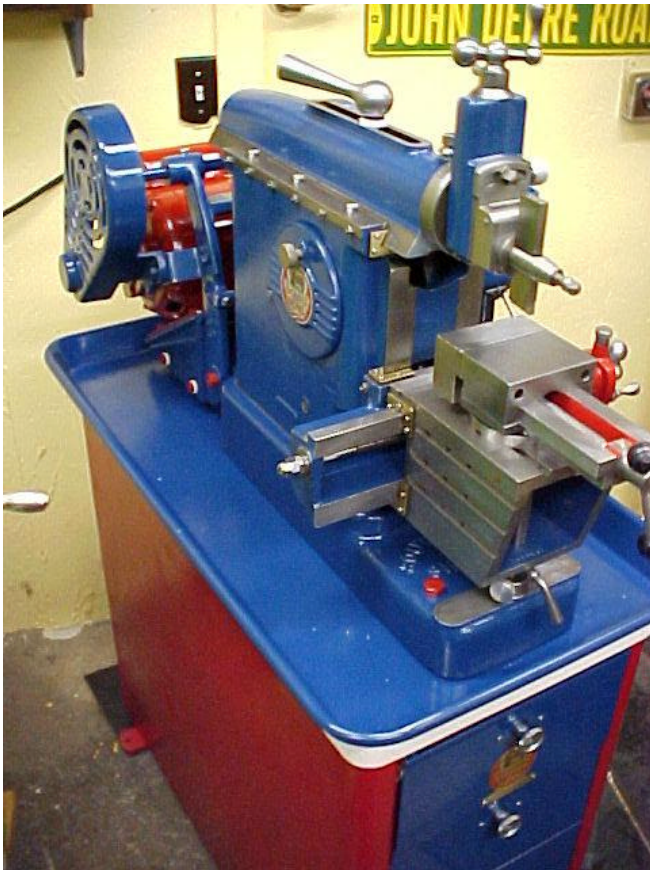
Don't think for a minute that Joe is done. His next project is rebuilding a Cincinnati 24" heavy duty shaper.

Keep sending letters and email with questions and interesting shaper stories.

My mailing address is:
Kay R. Fisher
80 Fryeville Road
Orange, MA 01364

email: Fisher@naisp.net

Kay



South Bend Photo by Joe Guidry

Joe picked the red, white, and blue colors to remember the year of the World Trade Center tragedy, and to also remind us that our American heritage lives on in the machinery of the past.

Joe also wants us to remember that many women worked machines such as these for the war effort



For Sale

Clausing Mill

?? Clausing 8520 Vertical Knee Mill \$1000

Reason for selling: we're selling our house and don't want to have to move or store excess machines. I also have a 10-inch shaper and Bridgeport that should do.

Kay R. Fisher
Orange, MA (978) 575-0663
Fisher@naisp.net

Super Sharp Shaper

WWII vintage AMMCO 7" shaper. Restored to near museum quality. Rescraped, repainted, and fully repaired. Runs as nice as it looks. Mounted on nice stand. Comes with vise, tool holder and all wrenches. \$600.00

Jim Paquette
(508) 278-2203
toolman@cape.com

Bar Bender plans

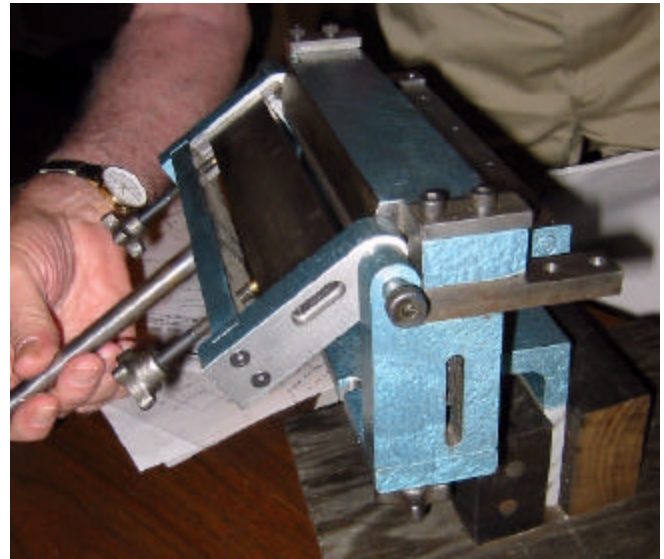
Nicely drawn plans for the small sheet-metal bender Dave Bono exhibited and talked about at the August Meeting.

You get 7 pages of dimensioned drawings, plus assembly drawing, materials list, and notes. The drawings are courtesy of Dave, and all proceeds go to NEMES.

Cost for plans: \$10 + postage.

Mike Boucher
10 May's Field Rd
Lunenburg, MA 01462-1263
(978) 345-7741

Also available at NEMES meetings!



Dave Bono's Bar Bender

South Bend Lathe, Rhodes Shaper

South Bend lathe, 9" model A horizontal drive, 54" bed, taper attachment saddle, 4" 3-jaw, dog driver plate, lantern toolpost and toolholders & original Southbend bench. \$1100.00 or B.O.

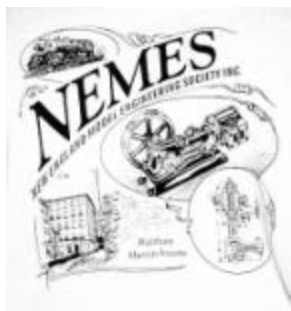
Rhodes 7" shaper \$300.00

Dave Audette
Worcester, Mass
(508) 797-6030
david.audette@verizon.net

Assorted Tooling

- ?? 10" horizontal rotary table. \$150
- ?? BP Mill Vise, 6x5. \$150 or B.O.
- ?? Mill Vise on swivel. \$50
- ?? Thin Set parallels \$25
- ?? New, imported 8" chuck in box \$50
- ?? Mill/drill with base. Power feed. \$1150.

James Chetwynd
124 Forest St
Melrose, MA

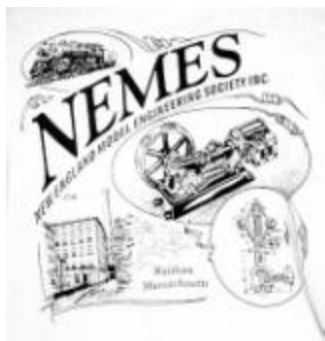


NEMES clothing

NEMES Tee Shirts

NEMES tee shirts are available in sizes from S to XXXL. These are gray short sleeve shirt, Hanes 50-50. You won't shrink this shirt! Artwork by Richard Sabol, printed on front and back.

Artwork:



Rear



Front

Prices:

S, M, L, XL \$12.00

XXL \$14.00

XXXL \$15.00

Add \$5 shipping and handling for the first shirt, \$1 for each additional shirt shipped to the same address

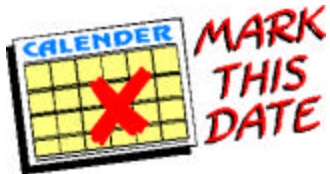
Profits go to the club treasury.

Mike Boucher
10 May's Field Rd
Lunenburg, MA 01462-1263
bandm3714@attbi.com

Shaper Work CD

Put out in 1944 by the New York State education Department this 326 page manual is chock full of valuable tips and information on using the King of Machine tools....The Shaper. Covered is everything you need to know about the care and feeding of the shaper, use of the shaper, even how to sharpen tools for the shaper. Scanned and saved in Adobe Acrobat format. \$5.00 shipping included.

Errol Groff
180 Middle Road
Preston, CT 06365 8206
errol.groff@snet.net



Upcoming Events

Bill Brackett

Oct 3 - NEMES Monthly club meeting

Waltham, MA Charles River Museum of Industry
(781) 893-5410

Oct 5 - The Original Yankee Steam-up

The New England Wireless and Steam Museum
1300 Frenchtown Road, East Greenwich, RI
(401) 885-0545

Oct 6 - NEMES Swap Meet

Noon to 5 - Roland Gaucher, 90 S. Spencer Rd.
Spencer MA (508) 885-2277

October 13 - Foreign Auto Festival

Owls Head Transportation Museum

Oct 20. - MIT Flea Market

9AM to 2PM Vassar St Cambridge MA
(617) 253-3776 between 9-5 M-F

Oct 26-27 - American Precision Museum Model Show

American Precision Museum, Windsor, VT
(802) 674-5781

October 27 - The Great Fall Auction & Open House

Owls Head Transportation Museum

Nov 1-3 - 17th Annual World Championship Punkin Chunkin Competition

Intersection of Rt 305 and 306 Millsboro, Del.
<http://www.worldchampionshippunkinchunkin.com>

Nov 7 - NEMES Monthly club meeting

7PM Charles River Museum of Industry Waltham,
MA (781) 893-5410

Dec 5 - NEMES Monthly club meeting

7PM Charles River Museum of Industry Waltham,
MA (781) 893-5410

Dec 8 - Straw Hollow Frostbite Show

Boylston, MA Roger (508) 869-2838

Jan 2 - NEMES Monthly club meeting

7PM Charles River Museum of Industry Waltham,
MA (781) 893-5410

Jan 18-19 - Cabin Fever Expo

York PA Gary Schoenly (800) 789-5068

Feb 15 - NEMES Model Show

Charles River Museum of Industry (781) 893-
5410 or Ron Ginger (508) 877-8217

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

wbracket@rcn.com or (508) 393-6290.

Bill