

# The NEMES Gazette

NEW ENGLAND MODEL ENGINEERING SOCIETY INC.

No. 156

April 2009

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## Editor's Desk

Frank Hills

Folks, there's just too much good stuff this week. So I'm going to give my space to somebody else. Take it away *Mike Boucher!*

## A New Display

For years, I've exhibited my Elmer Verburg designed "Wooden Beam Engine". When I built it, I used a decent looking piece of 2"x8" wood for a base. The 2" thickness allowed the flywheel to spin freely.

After several trips to Cabin Fever and looking around at our show, I noticed that people put quite a bit of effort into their engine displays. One nice example is the wooden base on Dave Sticker's "Mary" beam engine. I began to think that my simply "block of wood" display detracted from the work on the engine. After all, if I was able to make a mortise and tenon jointed 'A' Frame with the sides 4° from perpendicular, I should be able to make a nicer base than a block of wood.

The top would be 12½" x 7½" to give a decent border around the engine. A rectangular slot cut into the top would allow the flywheel to clear. The top would overhang the sides slightly.

-Continued on page 2

## Next Meeting

Thursday, April 2, 2009

7:00 PM. Meetings held at:  
Charles River Museum of Industry  
154 Moody Street  
Waltham, Massachusetts

## Membership Info

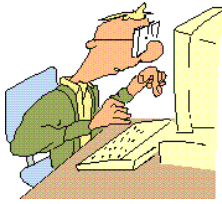
New members welcome! Annual dues are \$25 (mail applications and/or dues checks, made payable to "NEMES", to our Treasurer Richard Koolish, see right) Annual dues are for the calendar year and are due by December 31<sup>st</sup> of the prior year (or with application).

Missing a Gazette? Send mail or email to our publisher.

Addresses are in the left column.

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## **Editor's Desk**

-continued from page 1

I also thought to use two different woods: maple as the primary and walnut as an accent color. This was because the Beam Engine is mostly walnut (at least I think that's the type of wood I used. It was almost 20 years ago!), with a maple flywheel. As luck would have it, I found a few pieces in my modeling "scrap wood box" left over from when I made the engine, and there was enough for the accents. Though I don't recall the type of wood, at least I'm consistent!

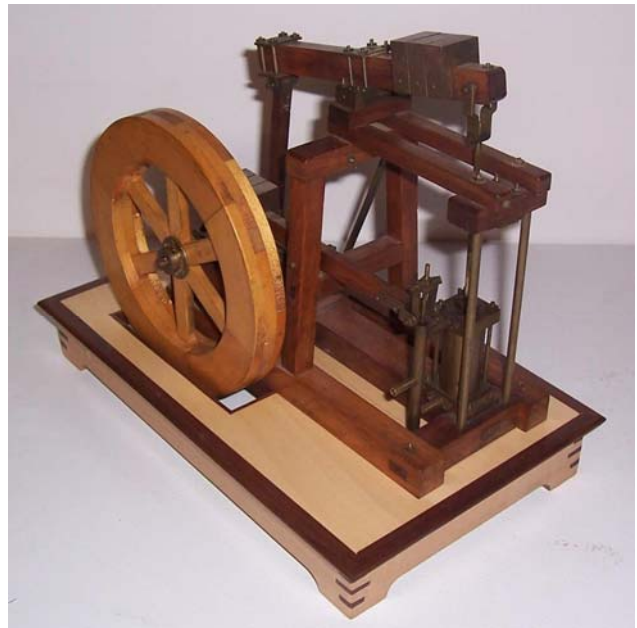
Part of the inspiration for the display was some wooden boxes I had made as Christmas presents in 2007. These simple boxes had 45 degree beveled corners, and a simple routed bottom to give the box the look of "feet".

I used the same techniques to make the 4 sides of my display base. I cut the 4 sides from a contiguous piece of wood, so the grain would match on 3 of the 4 corners. The sides are made from a single strip of 1½" x ¼" maple. I cut this strip into 4 pieces, two 11¾" long and two 7" long, noting the order and orientation.

I had made a panel cutting jig for my tablesaw. This made it easy to make all the sides be the same length, and to ensure the bevel cuts on the ends were perpendicular to the top and bottom. Using this, I cut the beveled corners, and then used my router table with stops on either side to route the bottom edge.

I made a simple clamping jig to hold the pieces together and have the clamping force working perpendicular to the faces being glued, another technique learned from building the Christmas present boxes. I then glued the pieces together in the right order.

One detail I added was decorative "inlays" on each corner. In order to do that, I had to make a jig that would hold the assembled sides vertical in my table saw, with the sides at a 45 degree angle to the table. This made cuts perpendicular to the joint, and small triangles of walnut formed decorative "keys".



Next, my attention turned to making the top of the display. I couldn't find a piece of maple the right width, so I glued two pieces together. I planned the joint so it would be at one edge of the rectangular hole for the flywheel. I cut that hole before gluing the pieces together, making life a lot easier there.

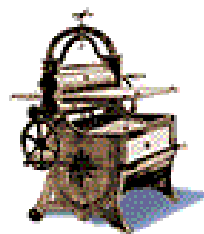
I used my table saw to cut relief on each side, so the top would fit inside the 4 sides like a box top. This made the top appear thinner. I then added walnut trim around the outer edges and the inside edges of the hole for the flywheel.

Everything was then sanded smooth, and the 4 top edges were rounded-over by hand.

I carefully marked and drilled slightly oversize mounting holes in the top. After test fitting, I glued the top to the 4 sides. James, my 4 year old son, helped with the polyurethane finish.

Now I have a much more handsome display for this engine. I think it adds a lot to how the engine looks, and I wish I had done it sooner.

Mike Boucher



## ***NEMES Gazette*** ***Editorial Schedule***

| <u>Issue</u> | <u>closing date for contributions</u> |
|--------------|---------------------------------------|
| May.'09      | Apr. 20, 2009                         |
| June.'09     | May. 18, 2009                         |
| July. '09    | June. 22, 2009                        |



## ***President's Corner***

Dick Boucher

### **The Meeting**

Once again, Herb Cotterly found our speaker this month, Bob Sgroi. Bob flies radio control aircraft of all types out of the 107 RC Model club in Lynn Massachusetts. For those of you who attended the model aircraft fly-in at the Plum Island Airport last year, you will remember him firing up a jet engine. He will be talking about model jet engines and his new venture, an L1011, which weighs about 40lbs and also an F15 fighter will be shown. Don't miss this meeting.

### **Miscellaneous Ramblings**

The First Robotics Competition has come and gone this year. Team 2589 Codebandits came in a respectable 24<sup>th</sup>, in front of a gathering of folks that filled one end of the Agganis Arena, with a lot of new lessons learned for next year. The robot was a very rugged and powerful machine with only one weakness - gravity was relied on to discharge the load from the collection basket. Of course, next year is an entirely new challenge but the success in the construction of the robot will be a lesson well learned for next year.

There were a number of demonstrations during the exhibition and I got a chance to get a hands on demonstration running the diVinci robotics surgery robot that was used for my surgery with a year and a half ago. Neat machine I must say.

Once again, our show at the museum was a stellar success many thanks to those who showed up early and helped set up the hall and to those who stayed late and cleaned up. Also many thanks to Gail Martha and her crew. Sue Bracket, Leslie Jones and Bea Boucher for keeping exhibitors and the attendees supplied with hot dogs, coffee, soft drinks and assorted sweets during the day.

As for you who exhibited, square foot for square foot, we have a show that is quite comparable

to Cabin Fever with so much craftsmanship all in one room. Congratulations fellows.

As I write this, it is a nice warm afternoon and I can see my shop time slowly diminishing as winter comes to an end. Of course as shop time ceases it is apparent that yard work will completely fill the void with a fallen pine tree to clean up an a lot of brush to burn from other trees damaged by the hard winter. Fortunately we were just outside the ice storm damage area, but I can only imagine the work those folks have this spring.

Dick B.



### ***The Steam Man of the Prairies.***

BY EDWARDS ELLIS,



## CHAPTER XIV.

### THE HUGE HUNTER.

SIMULTANEOUS with the report of the rifles came the pinging of the bullets about the ears of young Brainerd, who, having started the steam man, kept on going until he was a considerable distance from the ravine.

All the time he kept looking back, but could see nothing of his enemies, nor could he detect the point from which the rifle-shots were fired.

Now, as night descended over the prairie, and the retreat of his friends became shrouded in impenetrable darkness, he fully appreciated the fact that not only were they in great danger, but so was he himself.

The heathenish terror with which the steam man had at first inspired the savages had rapidly worn away, the circumstances unfortunately having been such that they had very speedily learned that it was nothing more than a human invention, which of itself could accomplish little or no harm.

He could but reflect, as the man glided slowly along, that if he had the three friends beside him, how easily they could glide away in the darkness and leave all danger behind.

But they were in the extremity of peril already, and, reflect and cogitate as much as he chose, he could see no earthly way of assisting them out of their difficulty.

Besides the concern which he naturally felt regarding his friends, there was a matter that more clearly related to himself that demanded his attention.

The water in the tank was at its lowest ebb, and it would be dangerous for him to attempt to run more than one hour or so longer before replenishing it. Consequently he was unable to stand anything like another chase from the Indians.

As the part of prudence, therefore, he turned toward the river, following slowly along the bank, in quest of some place where it would be easy and safe for him to secure the much-needed water.

It was a long and discouraging hunt. The banks were so high that he could find no point where it was safe for him to descend to the water's edge. There was too great a risk of "upsetting his cart," a calamity which, in all probability, would be irreparable.

At length, however, when he had wandered about a mile distant from the Wolf Ravine, he discovered a

place, where the bank had about six feet elevation, and sloped down gradually to the river.

Here he paused, and with a small vessel, descended to the stream, muttering to himself as he did so:

"Why didn't I think and put a pumping arrangement to the machine? I could have done it as well as not, and it would have saved me a good deal of trouble."

But regrets were now unavailing, and he lost no time in useless lamentations, setting to work at once. It was tedious labor, carrying up the water in a small vessel, and emptying it in the tank, but he persevered, and at the end of a couple of hours the tack was completed.

"I can make the wood stand me another day," he added, as he stood looking at the greatly diminished pile—"although, if I knew where to get it, I would load up now, and then I should be prepared—"

He suddenly paused, for scarcely a dozen yards away, coming up the margin of the river, straight toward him, he descried the figure of a man fully six feet and a half high.

Young Brainerd's first impulse was to spring into the wagon and start away at full speed; but a second glance showed him that it was not an Indian, but a white man, in the garb of a hunter.

"Hullo, boss, thar, what yer doin'?"

He was at a loss what reply to make, and therefore made none. The next moment the giant hunter was beside him.

"B'ars and bufflers! younker, what ye got thar?" he demanded, eying the steam man with an expression of the most amazed wonder. "I say, what do yer call that thing?"

"That," laughed Johnny, who could not avoid a feeling of strong apprehension at the singular appearance of the strange hunter, "is a sort of peregrinating locomotive."

"Paggyratin' locomotive—what's that?" he asked, in a gruff voice, and with an expression of great disgust at the unfamiliar words employed.

"You have seen a locomotive, haven't you?"

"Reckon I hev, down in St. Louey."

"Well, this is something on the same principle, except that it uses legs instead of wheels."

"Can that ere thing walk?"

"Yes, sir, and run, too; it traveled all the way from the Missouri river to this place."

The huge hunter turned upon him with a fierce expression.

"Yer can't fool this yar boss in that style."

"Don't you believe me?" asked the boy, who was fearful of offending the stranger.

"No, sar; not a word."

"How do you suppose we got it here?"

"Fotched in a wagon."

"Let me show you what he can do."

He was about to step into the wagon, when the hunter stopped him.

“See hyar, younker, who mought yer be?” The boy gave his name and residence.

“What yer doin’ hyar?”

“I’m traveling with this machine of mine.”

“How do you git it along?”

“I was just going to show you when you stopped me.”

“Hold on; no need of bein’ in a sweat about it. Do yer come alone?”

“No. I came with a hunter.”

“What war his name?”

“Baldy Bicknell.”

“B’ars and bufflers! did yer come with him?”

“Yes; he was my companion all the way.”

“Whar mought he be?”

Johnny Brainerd hesitated a moment. While the huge hunter might possibly be of great service to the beleaguered miners, yet he recollected that it was the desire of Baldy that the fact of gold existing in Wolf Ravine should be kept a secret from all except their own party.

Should it become known to any of the numerous hunters and emigrants who were constantly passing in the neighborhood, there would be such a flocking to the place that they would be driven away and probably killed for the treasure that they had already obtained.

The boy, therefore, chose to make a non-committal reply:

“Baldy is some distance away, in camp.”

“And what are yer doin’ hyar?”

“I stopped here to get water for this steam man, as we call him. You know anything that travels by steam must have the water to generate it.”

“I say, younker, I don’t want none of yer big words to me. Ef I h’ar any more, b’ars and bufflers, ef I don’t crack yer over the head with Sweetlove, my shootin’-iron, so mind what yer say, fur I won’t stand no nonsense.”

“I didn’t wish to offend you,” returned the boy, in the meekest of tones.

“How far away might be Baldy?”

“I couldn’t tell you exactly, but I think it is less than ten miles.”

“Be you goin’ back to camp to-night?”

“It was my intention—that is, I meant to do so.”

“Guess I’ll go with yer: but see hyar, younker, let’s see yer try that old humbug of yourn.”

The boy sprung into the wagon, glad of the opportunity of getting rid of what looked like a

dangerous man. Before he could start he was again peremptorily stopped.

“Yer see, I b’leeve yar a humbug, but if that ole thing does run, and, mind, I tell yer, I don’t b’leeve it will, do yer know what I’m goin’ to do?”

“I do not.”

“I’m goin’ to take it myself to chase red-skins in. It won’t bother yer much fur them long legs of yourn to carry that humpback home again. So, younker, start now, and let us see what yer can do.”

The boy let on steam, and the man started off on a moderate gait, which rapidly increased to a swift one. The huge, wonder-stricken hunter watched it until it gradually faded out of sight in the gloom, and still watched the place where it had disappeared, and though he watched much longer, with a savage and vindictive heart, yet it never came back to him again.



***Another  
Successful  
Show!***

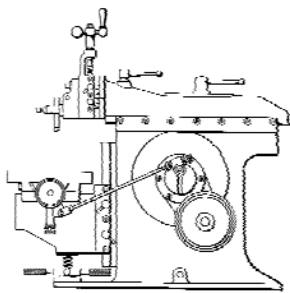
The 2009 NEMES show was an impressive success, judged by the number of attendees. Our exhibitors did not disappoint with their many and varied mechanical marvels. Thanks to the generosity of our door prize contributors, there was again an impressive array of prizes. Our heartfelt thanks go to the businesses and individuals who were kind enough to help make our show a success by contributing these door prizes. I would also like to thank Dick Boucher and Steve Cushman for their help in picking up some of the door prizes from the donors.

– Frank Dorion

**2009 NEMES Show**

## Door Prize Contributors

The Tool Shed – Worcester  
The Tool Shed – Waltham  
Wholesale Tool, Inc. – Stoughton  
New England Brass & Tool – Winchester  
Tools4Cheap (Jeff Beck) – Harvard  
Bill Brackett  
Ed Delaney  
Frank Dorion  
Errol Groff  
David Osier  
Richard Sabol  
Jim Volkening



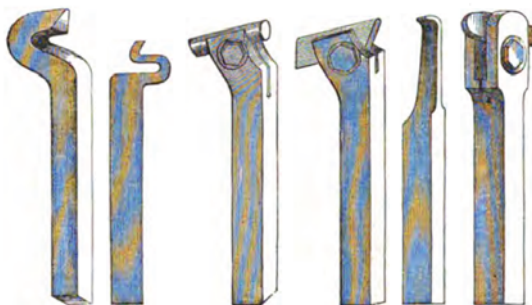
## *A Spring Tool Holder For Quick Change Tool Posts.*

by Bob Neidorff

Using a form tool on the lathe can be very frustrating. The huge cutting force causes deflection. Often, the tool digs in, grabs, removes a chip, and then releases in a repeating cycle called chattering, leaving a wavy or rough cut. In engineering terms, we call this a relaxation or hysteresis-feedback oscillation.

This problem was identified and solved years ago with the spring toolholder. I found reference to a spring toolholder on page 134 of an 1876 textbook: *Treatise on Lathes and Turning* by W. Henry Northcott. The sketch below is from that book.

FIG. 152. FIG. 153. FIG. 154. FIG. 155. FIG. 156. FIG. 157.



By the way, that entire book is available for free download from the web:

[http://books.google.com/books?id=5\\_A3AAAAMAAJ](http://books.google.com/books?id=5_A3AAAAMAAJ)

Normally, flex in a toolholder is bad. In this toolholder, a flexible bridge is intentionally built, but the flex point is above the axis of cut, so that when the tool deflects, it will pull out of the cut rather than dig in. This results in a very slight cutting-depth error, but no chatter. Again using engineering terms and analogies from control theory, this converts a positive feedback system into a high-gain negative feedback system that is stable.

Tom Lipton showed a picture of a spring toolholder for a quick-change toolpost in his recent book: *Metalworking Sink or Swim*, so I decided to make one and try it myself. Cutting the dovetail and slots require the right tools, but is straightforward mill work. This photo shows that I plowed a straight slot first, then opened the bottom with a keyway cutter, and milled the dovetail with a dovetail cutter last.



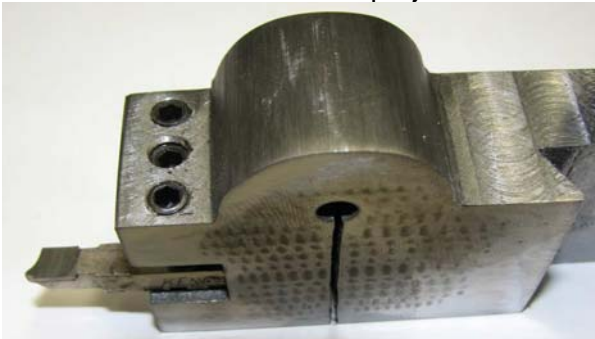
To form the outer arc of the spring, I contemplated making a form tool for the horizontal mill, but decided that would be too much work. I also considered milling progressive passes with a flat or angled cutter at different depths, approximating a circle. Instead, I scribed the arc, cut off the corners with a bandsaw, and smoothed the profile with a vertical 1" belt sander. The result is very true to the half-circle form. Last, I drilled a hole at the flex point and used the bandsaw to make the spring. Here's a photo of the completed toolholder.



So how does it work? I couldn't wait to try it! I started a controlled experiment with a  $\frac{7}{8}$ " mild steel rod and a  $\frac{3}{8}$ " carbide form tool in a conventional tool holder. I pushed the tool into the end of the rod and before too long, it started chattering badly. Then I faced off the first cut, removed the tool from the conventional tool holder, put it into the spring toolholder, and again tried to push the form tool into the end of the rod. This time, I got a smooth profile in one pass, without chatter, as you can see from the photo below!



This is not even the ideal configuration for this toolholder. Cutting forces push the tool toward the operator and also toward the tailstock. In this configuration, the toolholder only flexes on the axis towards the tailstock. I would expect even better performance with a tool mounted as shown below, but I haven't tried that yet. That will have to wait for the next project.



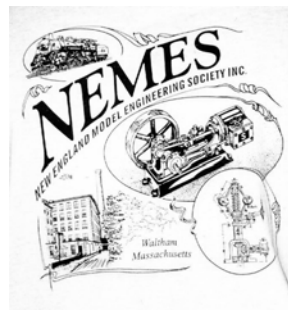
***For Sale***

***NEMES Shop Apron***



Look your best in the shop! The NEMES shop apron keeps clothes clean while holding essential measuring tools in the front pockets. The custom strap design keeps weight off your neck and easily ties at the side. The apron is washable blue denim with an embroidered NEMES logo on top pocket.

Contact Rollie Gaucher 508-885-2277



***NEMES clothing***

***NEMES Tee Shirts***

NEMES tee shirts and sweat shirts are available in sizes from S to XXXL. The tee shirts are gray, short sleeve shirt, Hanes 50-50. You won't shrink this shirt! The sweat shirts are the same color, but long sleeve and a crew neck. Also 50-50, but these are by Lee. The sweat shirts are very comfortable!

Artwork by Richard Sabol, printed on front and back:



Rear



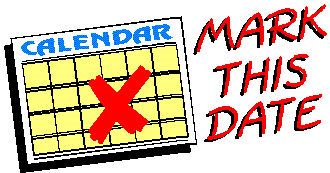
Front

Prices:

|       | Tee Shirts | Sweat Shirts |
|-------|------------|--------------|
| S - L | \$12.00    | \$22.00      |
| XXL   | \$14.00    | \$24.00      |
| XXXL  | \$15.00    | \$25.00      |

Add \$5 shipping and handling for the first tee shirt, \$1 for each additional shirt shipped to the same address. Sweat shirts are \$7 for shipping the first, and \$1.50 for each additional sweat shirt. Profits go to the club treasury.

Mike Boucher  
10 May's Field Rd  
Lunenburg, MA 01462-1263  
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## Upcoming Events

Bill Brackett

To add an event, please send a brief description, time, place and a contact person to call for further information to Bill Brackett at [thebracketts@verizon.net](mailto:thebracketts@verizon.net) or (508) 393-6290.

*Bill*

April 2<sup>nd</sup> Thursday 7PM  
NEMES Monthly club meeting  
Charles River Museum of Industry  
Waltham, MA 781-893-5410

April 18<sup>th</sup>-19<sup>th</sup> NAMES Expo  
Toldeo, OH  
<http://www.modelengineeringsoc.com>

April 18<sup>th</sup>-19<sup>th</sup> Woods Hole Model Boat Show  
Wood Hole, MA  
<http://www.woodsholemuseum.org>  
Jennifer Gaines (508) 548-7270

April 19<sup>th</sup> 9:00am The Flea at MIT  
Albany Street Garage at the corner of Albany and  
Main Streets in Cambridge

May 2<sup>nd</sup> Connecticut Antique Machinery Museum  
Spring Power Up in Kent Ct.  
Contact: John Pawlowski, President  
P.O. Box 1467, New Milford, CT 06776  
<http://www.ctamachinery.com/SpringPowerUP.html>

May 2<sup>nd</sup> NHPOTP engine show  
RT 113 Dunstable MA  
Robt Wilkie 207-748-1092

May 7<sup>th</sup> Thursday 7PM  
NEMES Monthly club meeting  
Charles River Museum of Industry  
Waltham, MA 781-893-5410

May 17<sup>th</sup> Spring Steam-up  
Waushakum Live Steamers  
Holliston MA  
<http://www.steamingpriest.com/wls>

May 17<sup>th</sup> 9:00am The Flea at MIT  
Albany Street Garage at the corner of Albany and  
Main Streets in Cambridge

May 19<sup>th</sup>-21<sup>st</sup> 9:00-5:00  
EASTEC at Eastern States Expo  
West Springfield MA 800-733-4763  
<http://www.sme.org/eastec>

May 23<sup>rd</sup>-24<sup>th</sup> Bernardston Show  
Rt 10 off Rt 91 Bernardston, MA  
Vickie Ovitt 413-648-5215

May 23<sup>th</sup> American Precision Museum opens  
<http://www.americanprecision.org/>

May 23<sup>rd</sup>-24<sup>th</sup>  
Spring Auto & Antique Aeroplane Show  
Owls Head Transportation Museum Owls Head ME  
<http://www.ohtm.org/>