

The NEMES

NEW ENGLAND MODEL ENGINEERING SOCIETY INC.

Gazette

No. 213

January 2014

© 2014 NEMES

Gazette Staff

Editor George Gallant
Publisher Bob Neidorff
Events Editor Bill Brackett

NEMES officers

President Victor Kozakevich
Vice Pres. Jeff Del Papa
Treasurer David Baker
Secretary Todd Cahill
Director Steve Cushman

NEMES web site

<http://www.neme-s.org>

Contact Addresses

George Gallant, Editor
571 Chestnut Street
Ashland, MA 01721
editor@neme-s.org

David Baker, Treasurer
288 Middle St.
West Newbury, MA 01985
treasurer@neme-s.org

Bob Neidorff, Publisher
39 Stowell Road
Bedford, NH 03110
publisher@neme-s.org

Bill Brackett, Event Editor
29 East Main St
Northborough MA 01532
events@neme-s.org

Errol Groff, Webmaster
webmaster@neme-s.org

Contributors

Max ben-Aaron
Bill Brackett
Kay Fisher



Shop Talk

Max ben-Aaron

Big Boys

Between 1941 and 1944, the American Locomotive Company (ALCO) built twenty five 4000-class articulated coal-fired, steam locomotives, popularly called "Big Boy" for the Union Pacific Railroad. At 132 feet in length and 1.2 million pounds in girth, the name is appropriate.

Operated by Union Pacific until 1959, the Big Boy fleet worked primarily in the Wyoming Division to haul freight over the Wasatch range between Green River, Wyoming and Ogden, Utah. They were the only locomotives to use a 4-8-8-4 wheel arrangement -- a four-wheel leading truck (for stability entering curves), two sets of eight driving wheels and a four-wheel trailing truck to support the large firebox.

Of the twenty five locomotives manufactured, eight were preserved on static display. I remember seeing a Big Boy at Steamtown in Vermont before it moved south. It was very impressive.

One, number 4014, sat around in Pomona, parked at the RailGiants Train Museum since 1962. Reacquired by Union Pacific, it is undergoing restoration at Union Pacific's Cheyenne, Wyoming Steam Shop to return it to operating condition. The restoration of 4014 includes converting the locomotive from coal-firing to No. 5 oil firing and is expected to take three to five years to complete.

Next Meeting

Thursday, January 2nd, 2014

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 David Baker) Annual dues are for the calendar year and are due by December 31st of the prior year (or with application).

Missing a Gazette? Send a US mail or email to our publisher. Contact addresses are in the left column.

Issue Contributions Due

FEB	JAN 23, 2014
MAR	FEB 20, 2014
APR	MAR 20, 2014

Table of Contents

Shop Talk.....	1
Metal Shapers.....	2
Treasurer's Report.....	4
Upcoming Events.....	5
NEMES Show Flyer.....	7

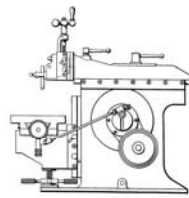
Having reacquired the behemoth, Union Pacific began inching Big Boy No. 4014 toward mainline rail tracks that will take it to Cheyenne, where it will be rebuilt and begin life afresh as a rolling museum. "It's been sitting here in sort of a railroad Jurassic Park," said Ed Dickens, senior manager of Union Pacific's Heritage Operations. "We're bring T. Rex back to life."

Big Boys used to pull 3,600-ton freight trains over the Wasatch Mountains between Ogden, Utah, and Green River, Wyo. When diesel engines replaced steam, 4014 was retired in 1959 after traveling more than 1 million miles. They were so successful they were still making profits for Union Pacific more than a decade after the railroad officially switched to diesel. Eventually, old 4014 was handed over to the Railway and Locomotive Historical Society's Southern California chapter, which oversees the RailGiants collection.

Moving the engine and restoring it is a major undertaking. The first step is to get the old locomotive onto a main-line track. Union Pacific crews are laying 4,500 feet of temporary track so it can reach a nearby Metrolink line. Layers of plywood, placed under 40-foot sections of rails and ties keep the 600-ton locomotive from crushing the asphalt parking lot. The 2-ton track panels, moved by forklift and truck, leapfrog ahead of Big Boy as it is slowly towed across the lot by a tractor.

When it reaches Colton, it will transfer onto Union Pacific tracks and start heading east for refurbishment and conversion instead of burning coal. Once on Union Pacific rails, Big Boy will be pulled by a diesel engine that also bears the old steam engine's original 4014 number. A second diesel engine will be hooked behind the steam engine to serve as a brake.

Union Pacific officials declined to speculate on what Big Boy's restoration will cost. But they are confident that Union Pacific has experts who will get it running again. Ed Dickens, senior manager of Union Pacific's heritage operations, is leading a crew of eight in getting the Big Boy ready. "These engines are our life," Dickens said. "I have the blueprints for this one on my smartphone."



Metal Shapers

Kay Fisher

R. G. Sparber's Gingery Shaper - Part 44

Fitting the Vertical Slide on the Cross Slide Casting - Part 2



Tapping Slide Photo by R. G. Sparber

I used my DRO to find the center of the left pad. With my clearance drill mounted in my drill chuck, I used one of the clamps as a guide to set my Y location. I want the clamp to be close to true but most important is that all 3 screws cleanly fit through the clamp and into the casting. After center drilling, I drilled the tap hole to a depth of 1.5". I then used a spiral tap to go in 1". This leaves me 0.5" to hold the swarf since spiral taps push the swarf ahead.

The technique for using the spiral tap continues to work well. With plenty of WD-40 in the hole and on the tap, I run the mill up to full speed, bring the tap close to the surface, cut power, and plunge the tap into the hole. You can see that I went in about 1/2" which is fine. If I bottomed the tap in the hole it could snap off and make me very unhappy.

With the tap half way in, I released it from the drill chuck and finished the job with an open ended wrench. It would be better to use a tap wrench but the T style I have is too tall. The ones that clamp from the sides are nice but I don't own one. One of these days I'll probably snap off a tap and then go out and buy or make one.



Drilling 2nd Hole Photo by R. G. Sparber

With the first screw in place and just snug, I use the clamp to locate the next hole using my clearance drill. I do not change the X axis position but rather swing the clamp and move the Y axis until I can lower the drill down into the hole without it touching. Then the clamp is swung aside and I drill and tap the hole.



Drilling 3rd Hole Photo by R. G. Sparber

The cycle repeats as I locate, drill, and tap my third hole. This approach takes longer than just dialing in hole locations and drilling, but I've had too many experiences where a screw does not fit. I prefer the conservative approach.



Narrow Pad Photo by R. G. Sparber

I knew that the narrow pad would be trouble even with 0.02" of metal between hole and outer face. After drilling the tap

hole, I went back and used a clearance drill for the first 1/4" in hopes of not having the tap blow the sides of the hole out. It did help but still bulged the side out. On the next hole I used a drill one letter smaller than the clearance hole and that helped. A few passes with a file removed the bulged areas.



Clamps Mounted Photo by R. G. Sparber

Both clamps are now in place and all looks good. Only now will I remove the casting from the table.

Each clamp was marked with a center punch so I can put them back in the same place after dismantling. One clamp has a single dimple on the edge that matches a dimple on the casting. The other clamp has two dimples.

The next step is to install the gib screws. Gingery suggests buying a jobber length drill. Well, first of all, I don't want to get in my car and go find one. Secondly, I don't want to spend the money on a drill that I may never need again.

The solution was quick and easy. I took a piece of 3/8" CRS, put it on my lathe, faced the end, and used the tap drill I had to drill a 1" deep hole. Moving to my mill I then cross drilled and tapped 1/2" from the end for a set screw.



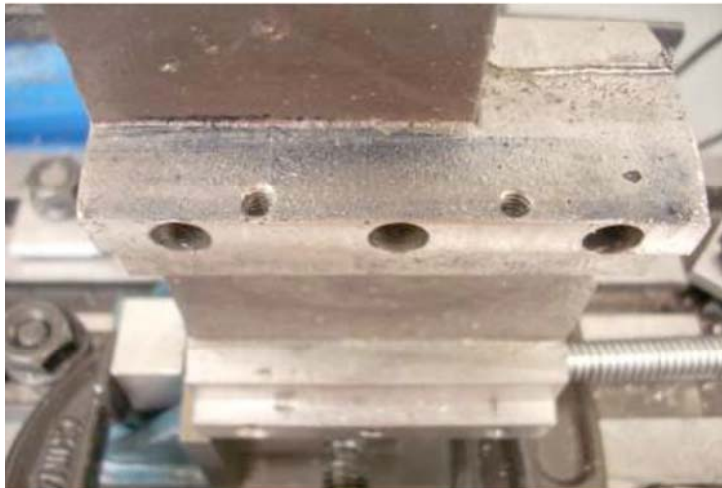
Drilling for Gib Screw Photo by R. G. Sparber

The casting is set up on knees against my primary reference planes 1 and 2.

A lesson learned from my last gib screw installation was to have the clamps tightly bolted down first. This provides

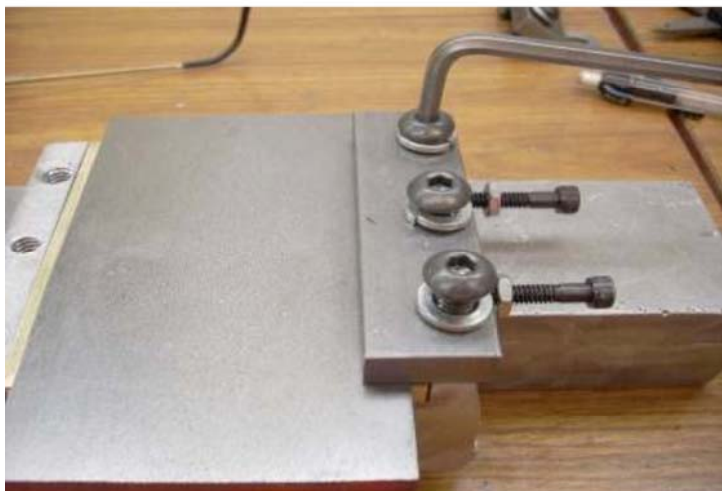
backing for the thin metal between gib hole and the top face of the support pad.

I then tried to drill my gib holes but ran into a minor problem. Since I had not milled this face flat, the drill bent as it skidded down the sloped surface. It would have been easy to side mill this face before removing the casting. To fix this, I chucked up the largest drill I had that would not hit the clamp and used it as a center drill. This worked. So did the tap drill extension.



Gib Screw Holes Photo by R. G. Sparber

And there is no break out!



Clamp and Gib Screws Photo by R. G. Sparber

I had room for a brass gib on both the left and right edges. The left gib is held in place with Loctite®. The right gib has two shallow holes drilled in it to accept the gib screws. Alternately, I could have used a 1/4" square piece of brass and only had a gib on the right side.

I have an interference problem between the lock nuts and the clamp. One solution is to make small cylinders so the nuts are clear of the clamp. Another solution is to mill away some of the clamp. For now I will do nothing. The top half of the nut locks against the edge of the clamp and that might be good enough.



Exploded View Photo by R. G. Sparber

You can barely make out the ends of the gib screws on the right. The ends were pointed on my lathe. I still have some fine tuning to do with shims but that will wait until I fit the assembly to the shaper.

I used an industrial paper punch to make the holes in the shims. Note that the left gib has not been glued in place yet.

The next step is to mount the cross slide ways.

First, I want to mention two typos in Gingery's book. On page 102 he says to use 1/4"-20 gib screws. He meant to say 10-24. On page 103 he calls for a slide way made from a 1/4" x 3" x 1" slab of CRS. He meant 1/4" x 3" x 10".

Stay Tuned for part 45 from R. G. Sparber next month.

Keep sending me email with questions and interesting shaper stories.

My email address is:

KayPatFisher@gmail.com

Kay



Treasurer's Report

David Baker

We have had a good year and the club has made quite a few acquisitions (manifold, pressure gauge, etc.) We lost a few members but gained the lost numbers back in new membership. The account is down quite a bit, but that is because people need to send in their membership dues ... So ... I'll wait ... you can do it now ... Sent it in already!!!! The current account as of today (Dec. 20) is \$9,500. That is all for now, I expect to see everyone at the annual show. Send in your membership dues, -Dave, your treasurer.



Upcoming Events
Bill Brackett

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

thebracketts@verizon.net or 508-393-6290.

Jan 1st New Years day run
Washakum Live Steamers
Holliston MA
<http://www.washakumlivesteamers.org/>

Jan 2nd Thursday 7PM
NEMES Monthly club meeting
Charles River Museum of Industry, Waltham, MA
781-893-5410
<http://www.neme-s.org>

Jan 25-26th
Amherst Railway Society Big Railroad Hobby Show
Eastern States Exposition, West Springfield, MA.
<http://www.amherstrail.org>

Feb 6th Thursday 7PM
NEMES Monthly club meeting
Charles River Museum of Industry, Waltham, MA
781-893-5410
<http://www.neme-s.org>

Feb 15th 10:00-4:00
18th Annual NEMES Model Engineering Show
Charles River Museum of Industry, Waltham, MA
781-893-5410
<http://www.neme-s.org>

NEMES MEMBERSHIP FORM

For 2014 Calendar Year

Please check one:

NEW RENEWAL

Please check one:

PAPER COPY E-MAIL COPY

NAME _____

ADDRESS 1 _____

ADDRESS 2 _____

ADDRESS 3 _____

CITY _____

STATE _____ ZIP _____

HOME PHONE_(_____) _____

WORK PHONE_(_____) _____

E-MAIL _____

Please enclose form in an envelope along with \$25 cash or check made payable to NEMES.

Dues can be brought to our next meeting or mailed to our treasurer:

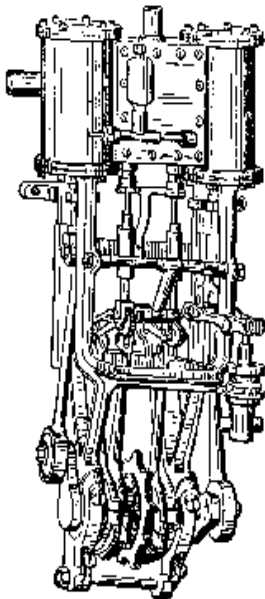
David Baker
288 Middle St.
West Newbury, MA 01985

18TH ANNUAL N.E.M.E.S. MODEL ENGINEERING SHOW

FEBRUARY 15, 2014

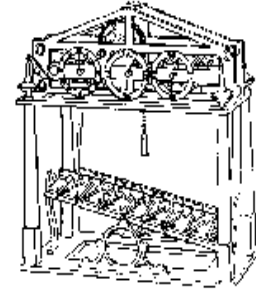
10:00 AM TO 4:00 PM

CHARLES RIVER MUSEUM OF INDUSTRY
WALTHAM, MA

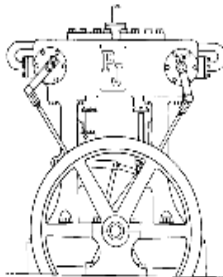


SEE OPERATING SCALE:

- ◆ STEAM ENGINES
- ◆ GASOLINE ENGINES
- ◆ AIRCRAFT ENGINES
- ◆ STIRLING CYCLE ENGINES
- ◆ CLOCKS
- ◆ MACHINISTS TOOLS AND
FIXTURES
- ◆ LOCOMOTIVES
- ◆ TRACTION ENGINES
- ◆ MODEL BOATS - STEAM AND GAS



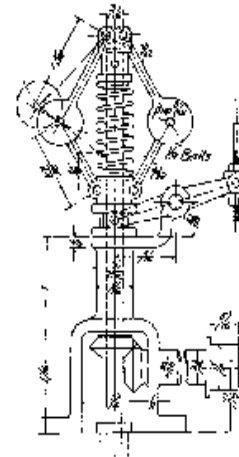
AND MEET THE CRAFTSMEN
WHO BUILT THEM.



EXHIBITORS SETUP STARTS AT 8:00 AM
COMPRESSED AIR FOR RUNNING MODELS
GAS ENGINES ALLOWED
NON-MEMBER EXHIBITORS WELCOME

GENERAL ADMISSION FOR SHOW AND MUSEUM

ADULTS	\$7.00
CHILDREN 6-12 WITH ADULTS	\$5.00
EXHIBITORS AND CHILDREN UNDER 6	FREE



Directions:

Take Rte. 128 to Rte. 20. Go East on Rte. 20 to Central Square, about 2 miles. Right on Moody Street. Cross the river, left on Pine Street to municipal parking lot on left. Short walk over the footbridge to the museum.

For additional information call the Museum at 781-893-5410 or go to
www.neme-s.org