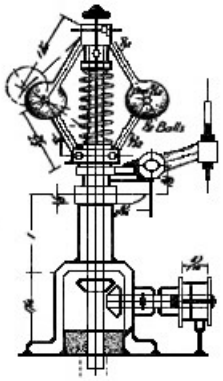

The NEMES Gazette

NEW ENGLAND MODEL ENGINEERING SOCIETY INC.

No 291 September 2020

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September Meeting

Due to the coronavirus pandemic, the September meeting will be held on line. The meeting will be on September 3, at 7PM.

For details of how to get the on-line meeting, please see Dan's President's message.

Contents

Club Business

Rich Baker

Please see Dan Eyring's President's page, below.

President's Corner
Dan Eyring

Message from the NEMES President
Dan Eyring
September 2020-08-29

Since our April meeting was cancelled due to covid -19 concerns, NEMES has managed to persist. We now have virtual monthly meetings using the Zoom app. These are great fun, with lots of show and tell and general discussion about NEMES.

We also now have a NEMES User Group [NEMES#groups.io], which has been enthusiastically embraced by some members – Dick Boucher in particular.

And finally Bob Timmerman is doing a great job of putting out the NEME Gazette each month, though he is always looking for inputs from Members with something to say. Furthermore, James Sheffler is keeping the NEMES Website up to date and with innovative new features.

If you are a NEMES member and getting the monthly Gazette, you already know all this. So why am I bringing it up? Well first, just to toot my and my fellow officer's horns for keeping NEMES going under very difficult conditions. But more importantly I want to encourage MORE NEMES members to join us on-line, both at the real time meetings and the User Group.

Folks who HAVE joined in can't stop talking about just how convenient it is to be in a NEMES meeting while still sitting at home in your shop. And perhaps your significant other will drop by to hand you a snack, if you're lucky!

Not having to drive all the way to Waltham, and then all the way back home afterwards – in the dark in the winter and often in bad weather – is truly a giant leap for mankind. Or at least for NEMES members who prefer to be at home in the shop wearing their favorite pair of slippers, and perhaps smoking their pipe (or what ever), if that's your thing.

And it's also very conducive to show and tell, since you don't have to haul your items 50 miles, just pick them up off the bench and point your camera at them. In fact, next month (October) I'm going to try (with Todd Cahill's help) to start a series of shop tours. You might wonder how you are going to manage you camera. Well, guess what – if you have an Apple or Android smart phone it's easy! Or so Todd and I hope to prove. I'm confident it will work because my wife has been doing remote teaching with zoom since July, including student groups in Australia, using two iPhones and a laptop.

So don't be left out of the fun and informative experience NEMES still is, even with pandemics, protests, hurricanes, and elections. Come join us this coming Thursday – see the Gazette or website to find out how.

Call or email me if you have questions:
deyring2017@outlook.com
(781) 790 - 3707

All NEMES Members

I hope you can join us for an on-line NEMES meeting on Thursday, September 3rd .
Topics for the meeting include:

- **Club business**

- **Discussion on how to pull more NEMES members into the Zoom meetings and NEMES User Group**
- **Show and Tell**
- **General discussion**

All NEMES Members

The link below leads to a couple of short tutorials about how to join a Zoom meeting.

https://support.zoom.us/hc/en-us/articles/201362193-Joining-a-meeting

And here is the zoom invitation. See you there!

Daniel Eyring is inviting you to a scheduled Zoom meeting.

Topic: Daniel Eyring's Zoom Meeting

Time: Sept 3, 2020 7:00 PM Eastern Time (US and Canada)

To Join the Zoom Meeting, click on the link below and follow the directions. You will be prompted to download and install the Zoom App.

https://zoom.us/j/6229563584?pwd=eHVmSmdBWFE5ZDRQUVZBWHZJV0NtZz09

Meeting ID: 622 956 3584

Password: 072169

Or dial in by phone using the following Toll Free number:

Toll-free number (serving all 50 states, the Caribbean, and Canada): 833-302-1536

Meeting ID: 622 956 3584

Password: 072169

New NEMES USER Group

NEMES now has its own User Group on groups.io.

To find it and join it, just paste the web address NEMES@groups.io in you browser. When you get there just click on the NEMES link in the groups list. Ask to join and it will tell you that you have to be approved for membership by the Group Moderator, namely me. This is the easiest form of security for the Group. I check my email several times a day and should get around to approving you before the day is out.

I've made it pretty wide open, inviting anybody interested in model engineering. You can post messages and upload/download files and photos.

Give it a try and let me know what you think.

From the Editor's Desk

Bob Timmerman

Dick has kindly copied me in on weekly updates from the Sandy Hill Locomotive Works, where he is Chief Engineer/Master Mechanic/Lead Machinist. Dick has been sending weekly updates with photos. If you like this type of content, thank Dick Boucher.

Dick has been working on cutting some bevel gears for the differential in his traction engine. Keith Rucker did a YouTube video on cutting some bevel gears for his planer, in which he mentioned that he used some special bevel gear milling cutters. I found this strange, and looked up bevel gear milling cutters on E-Bay, with little success. Nothing in the normal tool on-line catalogs either. I went into *Machinery's Handbook* a bit deeper, and found that in the two handbooks I have ready access to, the twentieth, and the twenty-sixth, there is a discussion on using

regular spur gear cutters to cut bevel gears. These discussions are virtually identical.

In order to understand what is going on with bevel gears, it is important to step back to the fundamentals of gear geometry. Spur, helical, and worm gears are all based on a cylinder, so the circumference of the gear is the same all the way across the face of the gear, and the space between the teeth is constant across the face of the gear. Bevel gears are based on a cone, so the circumference varies, and the space for teeth varies depending on how far up the cone you are--more space for teeth near the outer edge of the gear. Most bevel gear teeth are generated by special machinery. It is possible to mill the teeth, offsetting and rotating the cutter, but the spacing will not be the same as if the gear were cut on a gear generator. Bevel gears use the same involute profile that spur gears use. The gear cutter has to be small enough to cut only the space between the teeth at the smallest diameter. This may be where the confusion about special cutters comes in. However, if you look in detail in *Machinery's Handbook*, there are tables on how to select standard spur gear cutters to cut bevel gears, with examples. The examples are the same in both editions. The conclusion is that it appears that standard spur gear cutters can be used to cut bevel gears, but the cutters have to be selected for a different number of teeth than for cutting spur gears.

I hope this stimulates some discussion.

The Gazette is still looking for articles on your shop projects

Future Events

Pretty much everything has been shut down because of coronavirus. If anybody has information on a meet, please send it to me, and I will publish it.

Reports from the Sandy Hill Locomotive Works

This is Dick Boucher's original introduction, and I am reprinting it here, as I think it is still relevant.

June 7, 2020

Hello fellow live steam model hobbyist and principals of the New England Model Engineering Society,

James (grandson), Norm, Jay and John. This is my usual Sunday afternoon progress report on work here in the Sandy Hill Locomotive works. Dan, Rich, Bob and James Scheffler I am sending this along to you thinking it might be a way to get some interest back in the club if the fellows who have given up traveling to Waltham had a place to post pictures of their work and view other builders projects. To the new fellows on the list I am working on Cole's Models 2"scale Case steam tractor. For some time now I have been sending out pictures and a short description of the progress on the project to the first three listed having added John lately. Back in the early days of the Live Steam railroad hobby there were only a couple "meets" a year some as far away as Montreal Canada and Carl Purington started the "Traveling Locomotive Books" in which a hobbyist would attach a couple pictures of his work and forward the book to the next person on the list. Fortunately these books still exist and are repositoried at John K's museum in Beverly. At any rate my thought is we set up a formal place in our web site or someplace to create the "Traveling Hobby Machining Books" Your thoughts.

All for now, stay cool and stay healthy,

Richard L. Boucher
Chief Engineer/Master Mechanic/ Lead Machinist
Sandy Hill Locomotive Works

Recent work

Last article from July, July 26

Hi Gang,

I can't believe it is Sunday afternoon again but never the less here is a report on the weeks progress on the Case tractor. Not a whole lot of major progress this week I did have a few interruptions in my work flow. I had hoped to have the steering wheel on the steering shaft this afternoon. The drawings show just using another # 5 taper pin and a nut to hold it on the shaft but I thought a square shank on the shaft and

a square hole on in the wheel might be nice so I am going that way. Not shown in the pictures is the steering wheel which took a bit of time hand filing to smooth it up and get the flash of the parting line. Just a side note watching the U-Tube channel Windy Hill Foundry molding up the steering wheel must have been quite a bit of hand work. Photo 1 shows the setup using a square collet block to cross drill the worm gear and shaft in preparation for reaming for a # 5 taper pin.

Photo 1

Photo 2

Picture 1 also shows how nice the hobbed worm wheel came out. Pictures 3&4 show my third hand tool holding a bushing on a piece of flat stock for silver soldering.

Photo 3

Photo 4

This is to make the top bearing to support the steering shaft.

Picture 5 shows the support after it has been whittled out of the flat bar.

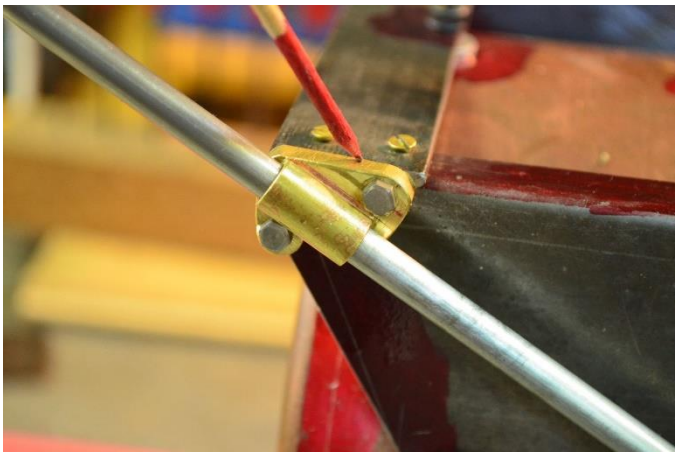

Photo 5

Photo 6

Photo 6 is an overall view of the steering gear so far on the boiler firebox.

Well it is onto the steering shaft and the steering wheel joint. Then it is time to mount the brackets to the boiler that support the wing sheets and maybe silver soldering some bushings and the wing sheet brackets to the firebox wrapper. That will require a drop in temperatures though.
Dick B.

Richard L. Boucher
Chief Engineer/Master Mechanic/ Lead Machinist
Sandy Hill Locomotive Works

August 2, 2020
Evening all,
Not a lot of progress this week at the Sandy Hill Locomotive works. Spent a day with James and Ainsley while Karen had some minor surgery. We did pick up a bench top mill for James [Ed note: Third generation machinist!] and enjoyed a burger at Wendy's with both of them. Karen is recovering well.

I did treat myself to some items from Little Machine Shop, Photo 1 because I missed seeing them at Cabin Fever, they are a set of 1-2-3 blocks in a nice fitted case both hex and square ER-32 collet blocks and a Starrett wiggler.

Photo 1

Photo 2 is my setup for machining the steering wheel casting for the Case tractor.

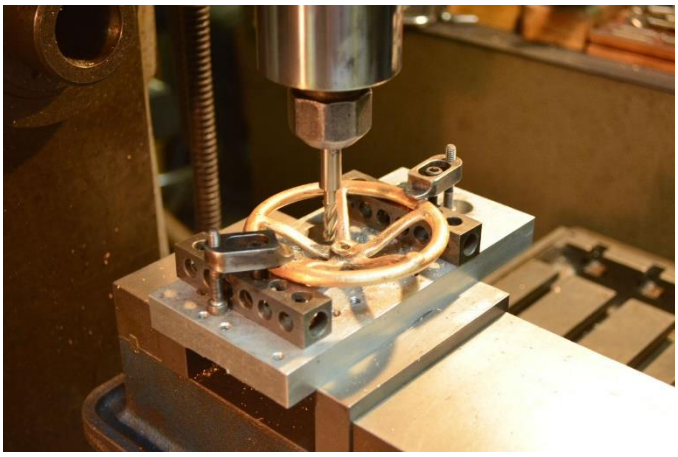

Photo 2

The small hold down straps I made during my apprenticeship sure are handy. Photos 3, 4 and 5 show the worm, worm wheel, chain scroll, bracket for the steering shaft and the steering wheel all assembled. The whole assembly turns very smoothly.

Photo 3

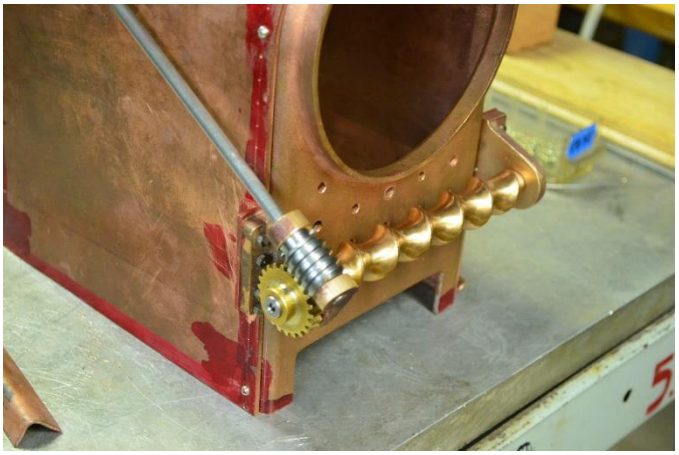

Photo 4

Photo 5

Well I decided to take a break from the tractor for a while and work on the Stuart Turner twin, Photo 6.

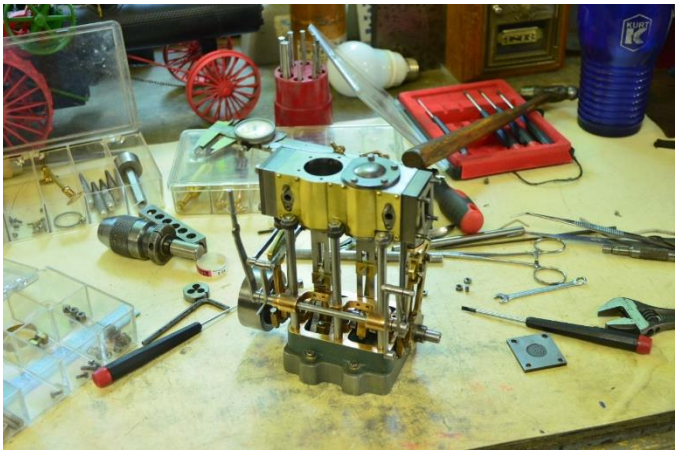

Photo 6

The engine has cast iron piston rings and so I made a small ring compressor just like the full size ones. Photo 7.

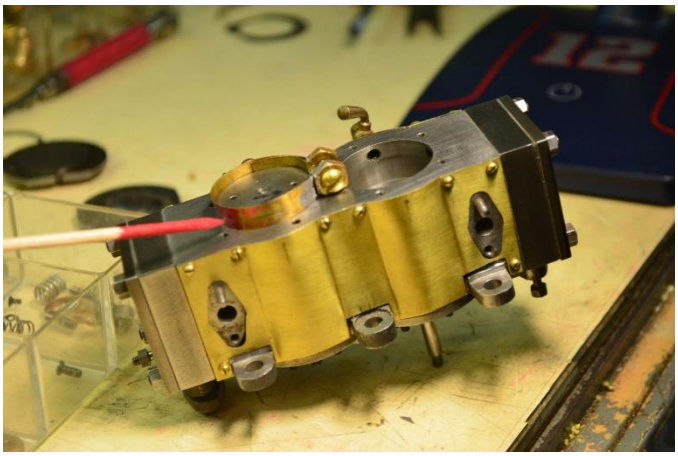

Photo 7

Worked slick as a smelt (old Maine saying). The way I get the valve starting to be timed is I make a Plexiglas steam chest cover, Photo 8, that way I can adjust the stroke of the valve to be equal on each end of it's travel then get very close in the timing and even operate the engine with the plastic cover on it to do the final tweaking which is done when the engine is running.

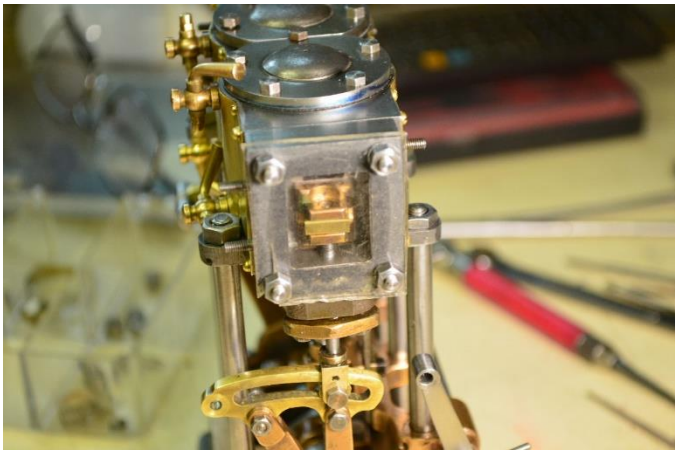

Photo 8

That is, I stop the engine tweak the valve eccentric and run the engine again to get the closest timing. I time each cylinder by itself getting both forward and reverse set separately then I go to the other cylinder and do the same. As of Sunday evening I have both eccentrics timed on one cylinder and the reverse eccentric done on the other cylinder I might have the forward timed this evening but the tireds are catching up with me as I write.

One final note to anyone who is lurking and not submitting material to Bob is that I got a nice note from Frank Dorion advising me the author of the book I am using for the gear work used SIN for a calculation when COS should have been used on the bevel gears for the differential. I probably would never have been able to figure that one out, Thanks Frank! For you others if I hadn't written of my adventures Frank wouldn't' have been able to send along that helpful message. So get writing guys! Dick B.

Richard L. Boucher
Chief Engineer/Master Mechanic/ Lead Machinist
Sandy Hill Locomotive Works

August 8
Hi All,

The first of the week saw me finishing the Stuart Turner twin launch engine by making a few more gaskets for the manifolds and timing the engine. When I made the flanges for the manifolds I had a couple extras so I used one as a guide to cut out the gaskets, Photo 1.

Photo 1

A quick drilling with the bolt hole size drill and then screwing the gasket material down to the cutting board (wood taps quite nicely for this purpose) under the flange and a quick run around with the Xacto knife and a very nice gasket is made. After a bit of tinkering around with the valve--- I tell an untruth--- after a lot of tinkering with the valve timing I got the engine to run quite nicely. Photos 2 &3 are views of the completed engine.

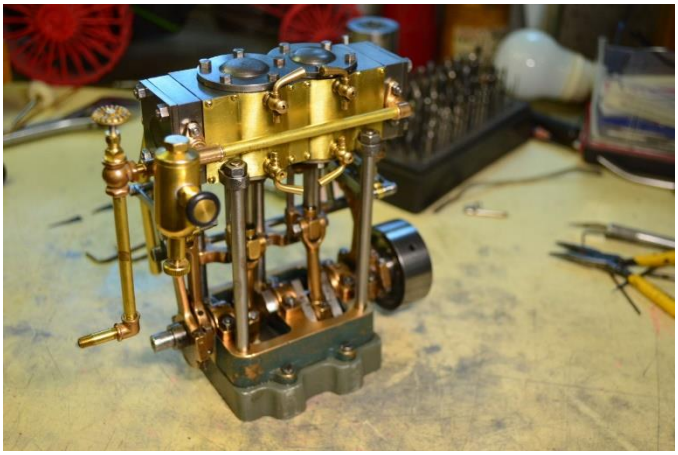

Photo 2

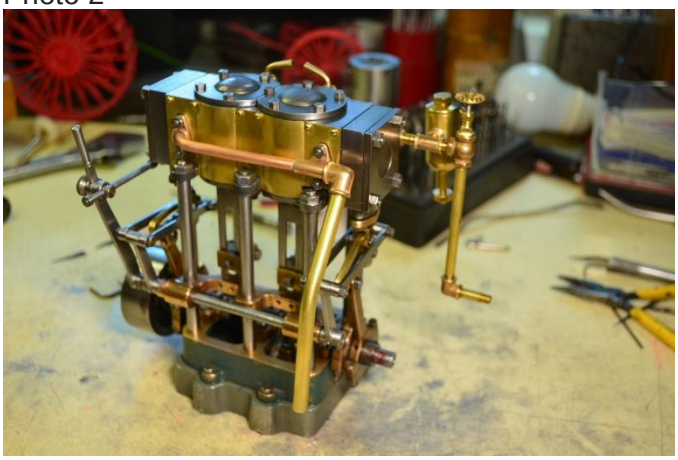

Photo 3

Well after a day cleaning the shop and putting away the tools, I started to study Ivan Law's book on gear making again for the bevel gears and decided that I needed another mechanical project to work on as I studied. Bob Timmerman dropped me a note that Keith Rucker had a video out on his making a bevel gear for the planer restoration he is working on and if you watch the video, I am still in the first ten minutes of the video, that is I am still doing my homework. Back in March 1976 Live Steam Magazine published a series of articles by Dr. James R. Senft on an "O" gauge live steam locomotive named "dickens" I had started three of them back somewhere around that time period and they have languished on a shelf since them. I do think Michael finished one. James let me know if it is around. Photo 4 shows the little plastic drawer and the pieces that were still in the drawer and the working copies of the drawings (I still have the original magazines)

Photo 4

Photo 5

Photo 6

Photos 5 & 6 show the fixture for drilling the timing holes in the frame and my first use of my brand new 1-2-3 block that I got last month. Photo 7 shows where I am this afternoon with some of the parts finished and fitted and some blanks for the next part of the process.

Photo 7

The boiler tube was specified as a sink tailpiece I could not for the life of me find a brass tailpiece they were all chrome plated. What a job getting the chrome off the tube. All for now state safe and stay sane, see you next week

Richard L. Boucher
Chief Engineer/Master Mechanic/ Lead Machinist
Sandy Hill Locomotive Works

P.S. SHLW --Sandy Hill Locomotive Works

August 16
Hi all,

It has been a slow week here at the works. A couple medical appointments, all is well, a couple cool days which were a good excuse to get some outside work done along with a bit more machine work done in the shop on "dickens". Photo 1 shows my use of a dial indicator as a positive stop in the mill.

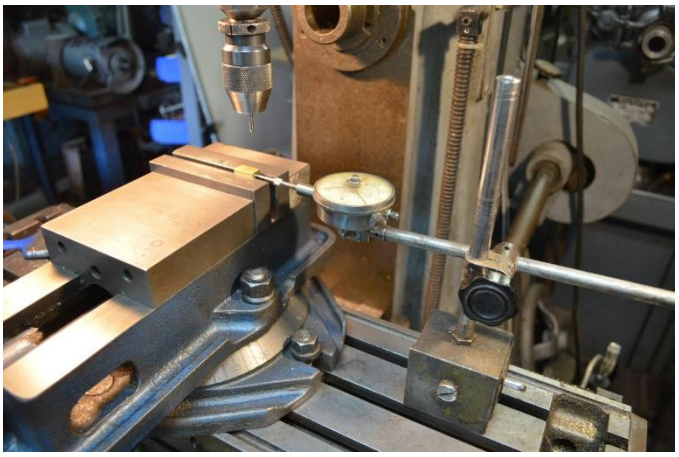

Photo 1

It is not only positive it is very accurate, more so than just bumping up against a stop. I set my "X" axis to zero on zero on the indicator and was able to put all the holes in the small details from this one setting. Photo 2 shows my new ER 32 collet block holding the cylinder head while putting a vent hole in the head.

Photo 2 [Editor note, shrunk due to focus, see photo 3]

I still have to do some work on the focus on close ups. The engine is a wobbler single acting so the vent on the out stroke is very necessary. Photo 3 is a close up of the # 60 drill drilling in the cylinder head.

Photo 3

Photo 4 shows all the small pieces made this week the blocks in the foreground are for the steam inlet and exhaust passages, yet to be drilled and the cylinder with the piston, cylinder head and the connecting rod with the big end brass.

Photo 4

Well that is all, as always stay healthy stay sane and stay careful in the shop.

Richard L. Boucher
Chief Engineer/Master Mechanic/ Lead Machinist
Sandy Hill Locomotive Works

August 23
Hi Gang,

As of this writing one chassis has all the port holes drilled in the cylinder and the port block using their drill jig. Photo 1 shows the setup in my sensitive drill press using my new 1-2-3 block.

Photo 1

I forgot to take a picture of drilling the port block with the same fixture but I have to do it again so I might have a picture next week.

I had a couple nice distractions. [Ed. note, family gathering deleted]. James [Grandson, and third generation machinist to be] and I did manage to get more set up on his new, to him, milling machine and he made a cut with it.

[Ed. note, repair of Harley crankcase is not modelmaking, but tricky machining, and is included here for general interest.]

The third interruption this week was repairing a Harley crankcase, restoring a tapped hole in a welded corner. Lots of fun trying to figure out exactly where the hole used to be from a half filled in location. Photos 2 and 3 show the new wiggler centered over the location after finding what I hoped was one side then the other side then using the half function on the readout then picking up the 3rd side and moving it the half the hole distance to hopefully the location where the hole used to be. When it is assembled, I will know if my plan worked. Photo 3 shows the setup, which is half the battle when working with these strange shaped objects, note the machinist jacks and straps holding it down on my vise jaws which just cleared a number of protrusions on the face of the casting.

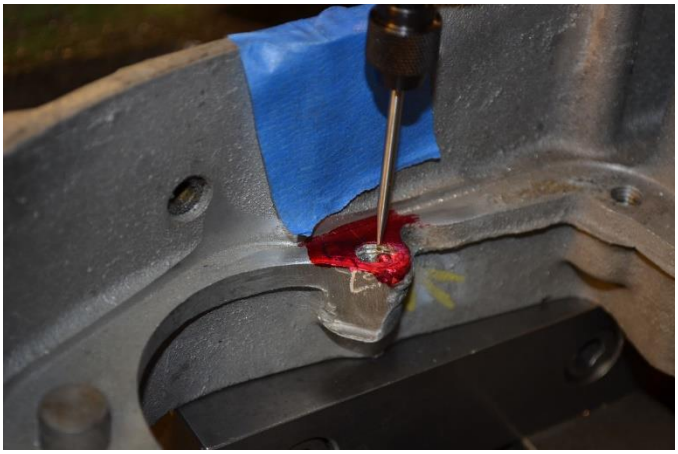

Photo 2

Photo 3

Photo 4 shows the completed cylinders for both engines and my nifty little spring winder and the springs I made which supply the pressure on the cylinder to the port block on an oscillating engine.

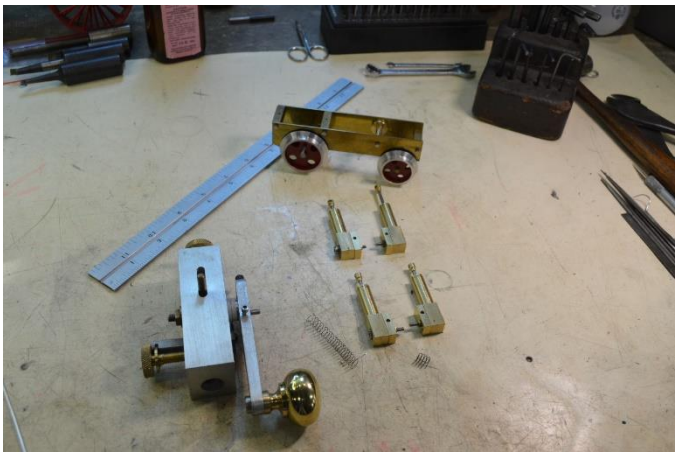

Photo 4

I remember Bill Bracket built one also and Bill being a much better wood worker had a nice fitted case with green flocking holding the tool. So, I thought I would offer a reference as to where I found the plans for this unit so since Bill has built one, I wondered if possibly he had written up the article in our Gazette. Well it didn't take long for me to give up that search. Still wondering during one of my sleepless nights (no joke) I started a search on my trusty bedside laptop. At first, I though the article might have been in Modeltec magazine. A lot of different searches using both Modeltec, hand held spring winder and Bill Bracket's name found no results. Then I started looking for just the winder and lo and behold after scrolling through a lot of pages there was a picture of it, clicking on the picture I discovered the article was in Issue 19 of Model Engine Builder which I have, so there you have it quest ended and you have a place to look for the winder Now Bill also had drawings for a loop former for extension springs if anyone knows where the plans for this are please let me know.

Today during the downfall thunder storm we had I grabbed a wad of Never Dull and polished and assembled one of the chassis, photo 5.

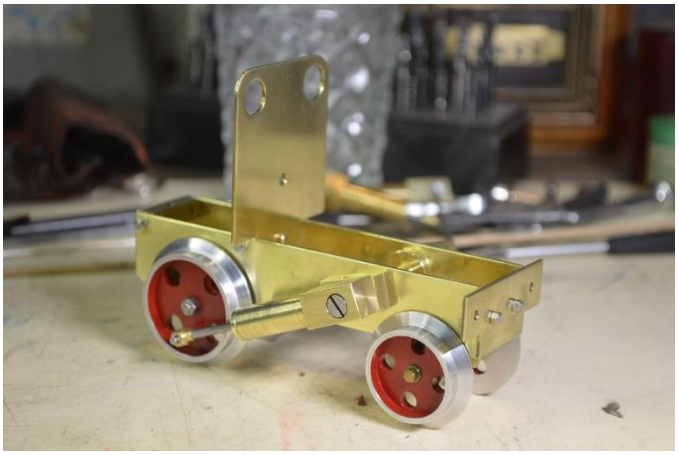

Photo 5

So there you have the weeks adventures, oh yes I got my large John Deere lawn mower engine running and got a bit more trashing stuff in the barn accomplished during the cool days.

Dick B.
Richard L. Boucher
Chief Engineer/Master Mechanic/ Lead Machinist
Sandy Hill Locomotive Works