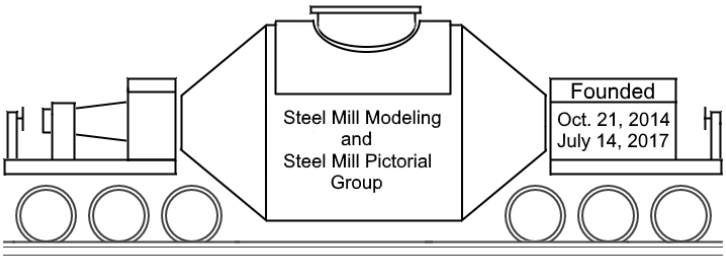
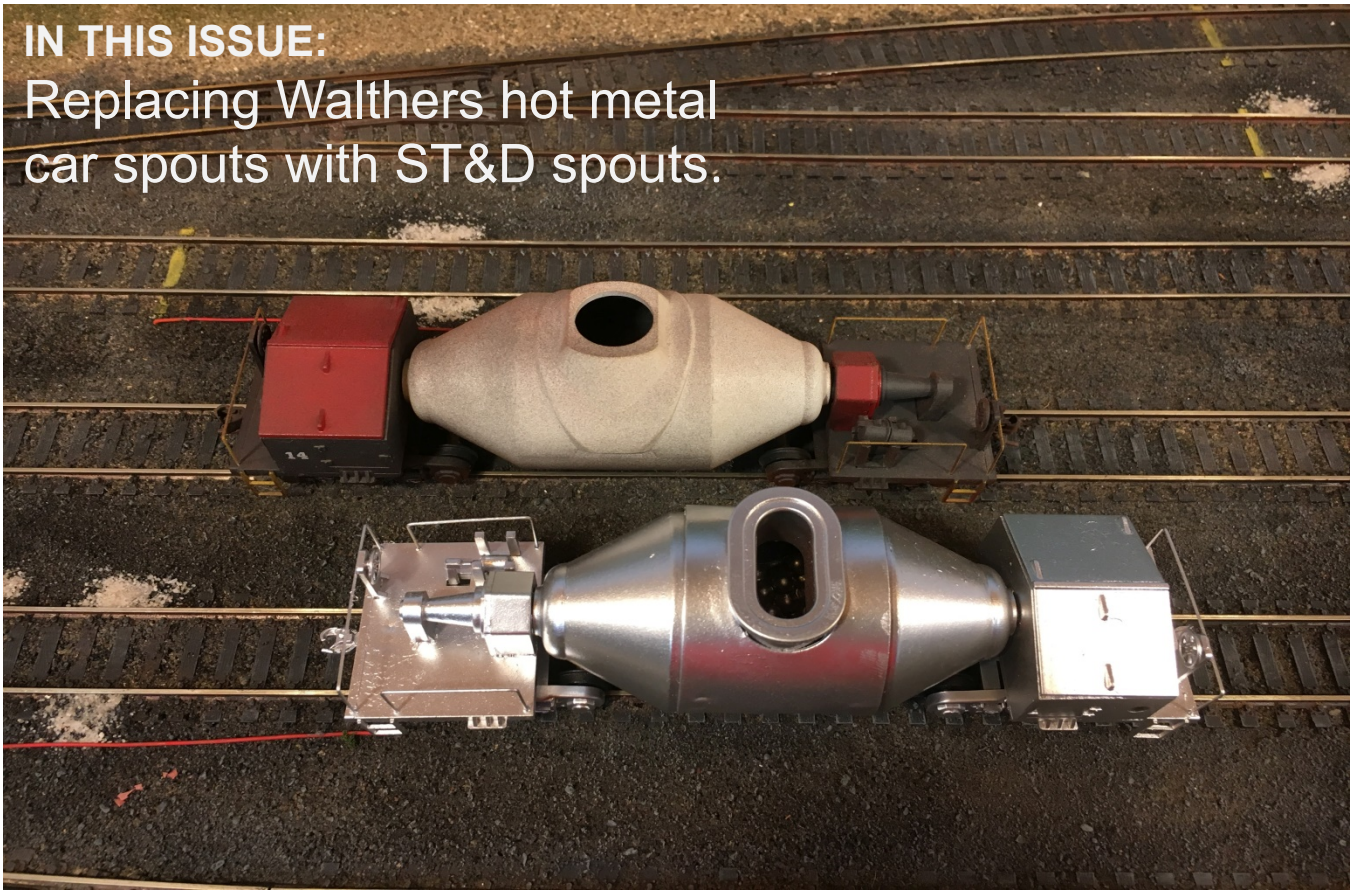
Volume 2 Number1 2018




The Mill is an official publication of the Steel Mill Modeling and Steel Mill Pictorial groups

# THE MILL



**IN THIS ISSUE:**

Replacing Walthers hot metal car spouts with ST&D spouts.

**ALSO:**

*HO Scale 3D Printed Quenching Locomotive Review
*Hot metal transfer train
*Updated Steel Mill Related Books, Videos & Websites.

**The Mill**
The Mill is a publication of the Steel Mill Modeling and the Steel Mill Pictorial groups and is sent out to the readers quarterly. The Mill is only available in PDF format and is free to subscribe.

**History**
The Steel Mill Modeling group was founded on October 21, 2014,
Nov. 6th, 2017 1,186 members

The Steel Mill Pictorial group was founded July 14, 2017,
Nov. 6th, 2017 129 members

**The Purpose**
This newsletter is to recognize the members of the steel mill community that would like to share there modeling ideas, on how-to build steel mills and equipment and the members who like to share there knowledge of the steel industry in general. This also includes industries that support the steel industry including coal, lime store, slag, coke, etc.

**To Sign Up**
To sign up to receive the newsletter, send an email to Don Dunn at don_csx@hotmail.com
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**Thank You**
I like to thank all the members of the Steel Mill Modeling Group, Steel Mill Pictorial Group and the Yahoo Steel Mill Group for what you all have done to make this newsletter possible.

As Always Take Care, Stay Safe, Happy Modeling and God Bless you all.

Don Dunn
Editor

## Cover Photo

Cover photo was take on Don Dunn's KV&O layout. The upper hot metal car is a stock Walthers car while the lower cars is a Walthers cars with a State Tool & Die spout (Page 14).

## In this issue



## Submission information

Any one who would like to submit pictures, articles, club news, upcoming shows or evens to be placed in future issues of The Mill, please send an email to don_csx@hotmail.com. Pictures used have to of your own collection or used with permission. When submitting pictures the bigger the better for detail purposes.

All pictures in The Mill are used with permission. If there are any questions concerning pictures used please send them to don_csx@hotmail.com and the question will be forwarded to the contributor of the photo.

## Groups & Clubs

Steel Mill Modelers Special Interest Group (SMMSIG)

"The mission of the SMMSIG is to share information concerning modeling steel mills and railroads a well as to foster camaraderie among persons with interests in these topics.“

http://www.smmsig.org/

## Upcoming Events


May 17-20, 2018
Cincinnati Express
Mid-Central Region Convention
West Chester, Ohio
Hosted by Cincinnati Division 7, MCR, NMRA
Check out Cincinnati Division 7 Webpage for additional information.
http://www.cincy-div7.org/convention.html

## Podcast

Like to give a shout out to Nick Ozorak of “The Roundhouse” podcast. Nick has taken time to do a podcast with Bernard Kempinski author of “The Model Railroader’s Guide to Steel Mills,” on steel mills and operations in them. To ether download or listen to the podcast online, follow the link below. Also, check out Nick’s podcast on the Bessemer & Lake Erie Railroad, and Youngstown Steel Heritage

Steel Mill Manufacturing Railroads
http://theroundhousepodcast.com/2017/09/17/model-railroad-steel-mill/

Bessemer & Lake Erie Railroad
http://theroundhousepodcast.com/2017/01/22/bessemer-lake-erie-rr/

Youngstown Steel Heritage
http://theroundhousepodcast.com/2017/11/06/youngstown-steel-heritage/

## Modeling Photos

**Tom Patterson**

Laurel Ridge Coal Company, loads  coal to be shipped to  U.S. Steel's Black River Works in Lorain, OH

The coal prep plant is based upon the Truax-Traer plant in Kayford, WV on the C&O's Cabin Creek branch as it appeared in the late 1950's. Truax Traer was a division of Consolidated Coal Corporation. There are several photos of it in one of the C&O Historical Society's books. Tom kitbashed the Walthers New River mine using these photos as a reference. All of the sides were changed to reflect the window configuration on the prototype. The roof orientation was rotated 90 degrees, again to match the prototype. The structure was expanded to include four tracks, however, the prototype had at least eight under the tipple. This plant was rebuilt numerous times over the years and ultimately was operated as the Shamrock Central Cleaning Plant by Bethlehem Mines Corporation, a subsidiary of Bethlehem Steel. The tipple, the town of Kayford, and everything in the area disappeared under a huge mountaintop surface mine operation. Structure built and photos by Tom Patterson

**Ronald Armstrong**

Open Hearth scratch built by Ron. Ron has worked on this project for a couple years to get it where it is today. The details of this structure is overwhelming and the pictures don't do it justice. Structure built by Ronald Armstrong and Photos by Don Dunn

Photo 5


Photo 6

**John Miller**

John is currently rebuilding his layout at his new home. Photo 5. Shows John's Newport Steel coil mill, built from Walthers Rolling Mill. Photo 6. Is John's Continues Caster and Electric Furnace. Both were kitbashed from Walthers rolling mill and electric furnace kits with additional details added. Structures built by John Miller, Photos by Don Dunn

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Photo 7

Photo 8


Photo 9

**Rick Bickmore**

Photo 7, Ingot prep facility on Rick's Harrisburg Terminal Railroad, Photo 8 The Harris Terminal Railroad Street plant's waste oil facility in the foreground left and the ingot stripper in the center background. Photo 9, Blast Furnace and Highline. There is a mirror in the back giving the appearance of 2 blast furnaces. Models and photos by Rick Bickmore

**Mike Hartlett**

Pennsylvania Railroad Blue Mountain Division

The following are photos of the steel mill on Mike's full basement layout, located in Lancaster PA. All photos by Eric Craig


Photo 10, This photo was taken in front of the North Plant Open Hearth and shows the ore yard, crane and blast furnace. All are Walthers kits and were built by Mike.


Photo 11, This is a photo of the entrance to the South Plant Rolling Mill. The structure was built by Jim Kerner, stripper crane by Dean Freytag, ingot molds on the right by Mike and ingot molds on the left by Eric Craig.


Photo 12, This is a photo of the interior of the South Plant Rolling Mill. The structure, built by Jim Kerner, is a modified Walthers Rolling Mill Kit. The mill stands and rollers, also built by Jim, are Chuck Pravlik kits. The crane, partially hidden by the support columns on the right, was built by Dean Freytag



**Scott Woods**

Photo 13, Overall length of the BOF is correct but I had only 12" of depth to squeeze in what should have taken 48". I have 3 bays of operations squeezed into one bay and had no room for the transfer cars underneath. The CBI BOFs, Pecor scrap machine, scrap buckets, and ladles are all scratch built and are pretty close to true. Photo 14, The stripper shed, 2 walls out front to slow cooling, bridge crane with the extended cab - ingot mold stripping tongs. Buildings and photos by Scott Woods.

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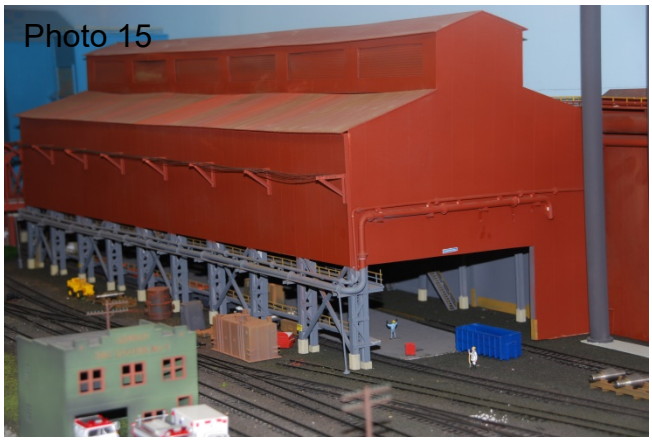
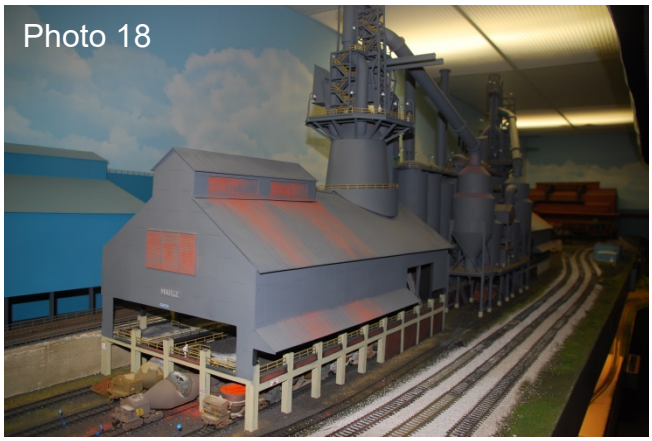



**Ken McCorry**

Ingot prep building, Photo 16, and Basic Oxygen Furnace (BOF), Photo 17, on Ken McCorry layout. Photo 18 is of both blast furnaces on Ken's layout. The detail on both of these is outstanding.

Photos by Tom Stewart, buildings and layout are by Ken McCorry on his Lehigh Valley HO scale layout.

**Matt Rogan**

Matt has been working on his mill since June 2017. Currently, the mill is unnamed. Matt, has come along way in just a few months.



Photo 19 & 20 shows Matt's, Blast Furnace. Matt has taken the Walthers blast furnace and added additional details to and redone the top of the works to backdate the furnace.

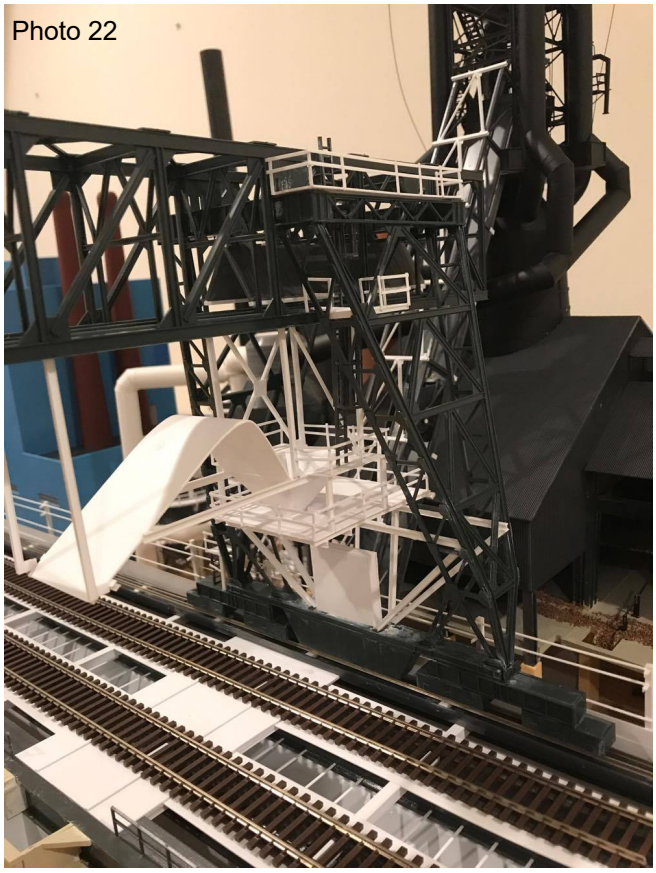




Photo 21 is a scratch build shovel modeled after a Manitowic 4600 electric shovel. Photo 22. Additional details added to the Walthers bridge.

**Dean Freytag**

These next few shots are from the late Dean Freytag's Davies Steel layout. These pictures were taken by Tom Stewart and taken during multiple visits to Dean's layout.


Photo 22, Foreground ladle repair furnace and blower house in the back.


Photo 23, Looking at the coke, with the highline and switching leads to the blast furnace in the foreground.

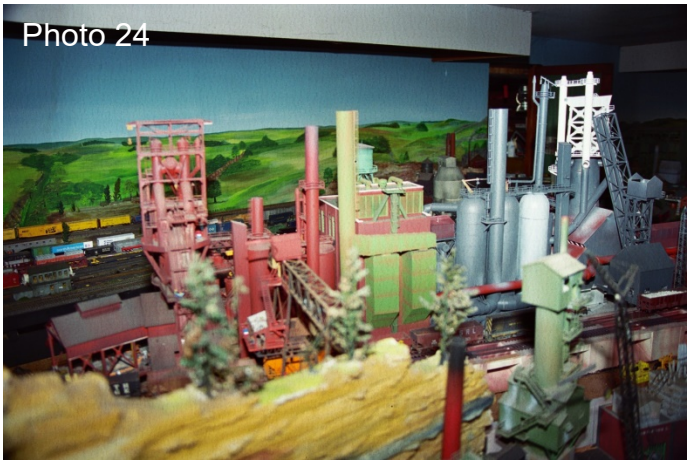



Photo 24, Looking at the back of two furnaces and blower house. Little Norma blast furnace is to the left.


Photo 25, Continues Caster.


Photo 26, Lime Plant.


Photo 27, Little Norma and overall shot of the peninsula of Dean's layout.


Photo 28, Sinter Plant


Photo 29, Pig iron plant.


Photo 30, Looking down the highline. To the right is one of the scratch built furnaces to the left is where the coke ovens are located.

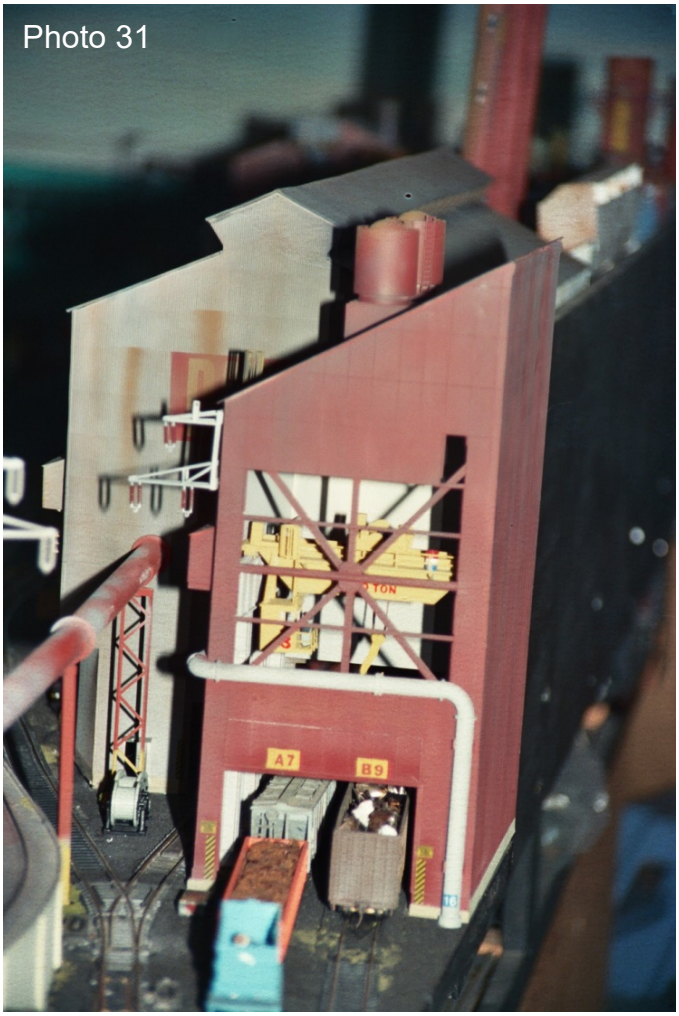



Photo 31, Building flat that Dean had many of thought out the layout

**David Minarik**

Mercer Junction is  David Minarik home layout. The oddity about this beautiful 44’ x 18’ steel mill layout is it is an 3 rail O scale layout. The structures consist of a 6 stand rolling mill and a blast furnace. Also on the layout, related to steel production are: Mon Warf for shipping coal and coke and an iron range for iron ore. Pictures by David Minarik





**John Tews**

John's Timber River Railway has been in other publication and in videos. Updates to the layout has improved over all operations of his layout and can be found on the Timber River Railway's website. http://www.timberriver.org/


Photo 37, TRR815 switches the loading pocket behind the mine truck dumping ore into the crusher on the TRR


Photo 38, Helicopter view of the Hill Mine Hill Mine at North Range on the Timber River Railway


Photo 39, TRR F's arrive with empty cars for the Virginia Concentrator. The covered hoppers haul the waste sand and rock to Allouez for processing.

**Bob O'Neal**

Bob's "US Steel's Homestead Steel Works" is set in 1940s-50s is 14' X 16' basement HO gauge train layout. Bob's family on both sides were Pittsburgh steel men. Grandfather O'Neal was the Homestead Works transportation superintendent and Grandfather Chamberlain was a scales inspector who traveled all over for US Steel. When Bob did his family history, he realized I did not know how steel was made, even though it was the landscape where I grew up. Bob studied "The Making, Shaping and Treating of Steel" a USS handbook for engineers. This layout is a representation of how steel was made around WWII.


Photo 40, The USS Main Gate (CIS means Carnegie Illinois Steel, the forerunner to US Steel Corp.) At top center, you can see our Tacoma house inserted in Homestead, a borough of Pittsburgh in 1950.


Photo 41, A coke train travels across the Monongahela while a 'towboat' pushes a load of coke and limestone to serve the 27 plants along the River. US Steel had a massive coke plant at Duquesne.

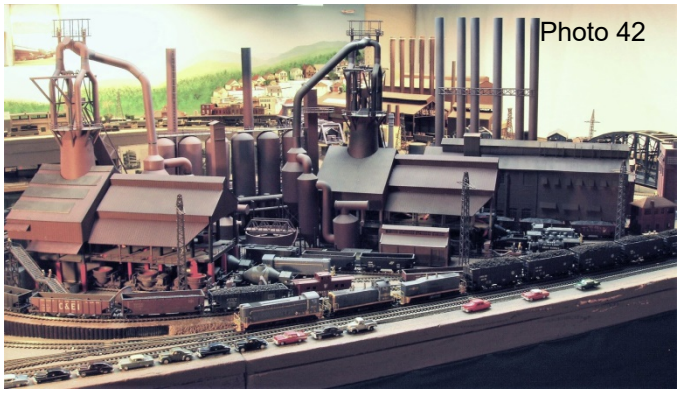
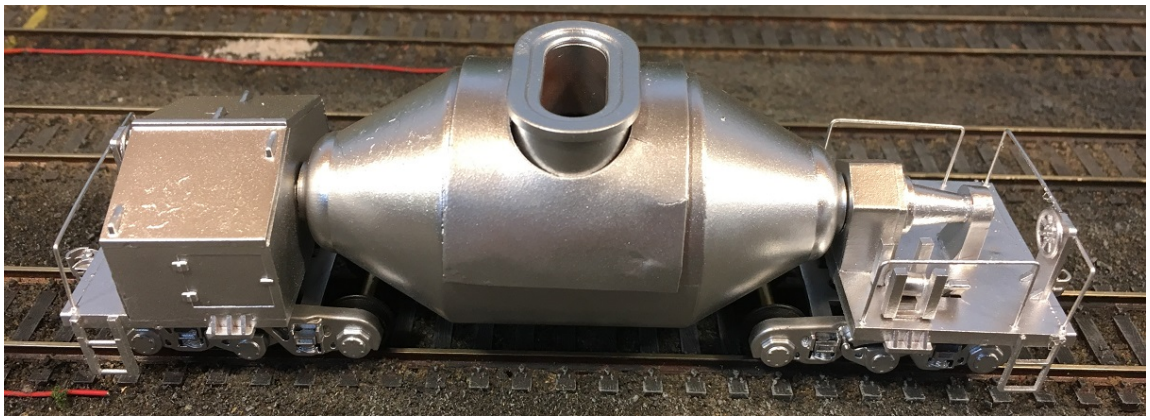



Photo 42, Bob's model represents Carrie blast furnaces No.3 and No.4 with the huge powerhouse & blower engine house following at right. The tall cylindrical stoves in center heated to 1800 F and the blowers raised the temperature in the furnaces to 3600 F to smelt the iron. In the background, across the Monongahela River, you can see the stacks of the Homestead Steel Works where iron was turned to steel. At right is the famous "Hot Metal Bridge" over which the rail cars of iron traveled to the rolling mills.


Photo 43, Arriving at the Steel mill, the bottle cars emptied their loads into pouring ladles. Several ladles of iron will be emptied into the cylindrical "Mixer" up on the main floor to create a uniform batch.

# Replacing Walthers hot metal car spout.



The hot metal car kits from Walthers was a welcomed kit to steel mill modelers in HO scale. The biggest problem was the spout on these cars. On most real hot metal cars they had an oval spout, while the Walthers kits have a circular spout. State Tool & Die came out with a replacement spout for the Walthers kits but it takes a little work to get the ST&D spout to fit the car.

The spouts can be replaced on a built kit but be careful of the detail parts. I'm starting with an unbuilt kit for this project. Fig 1.

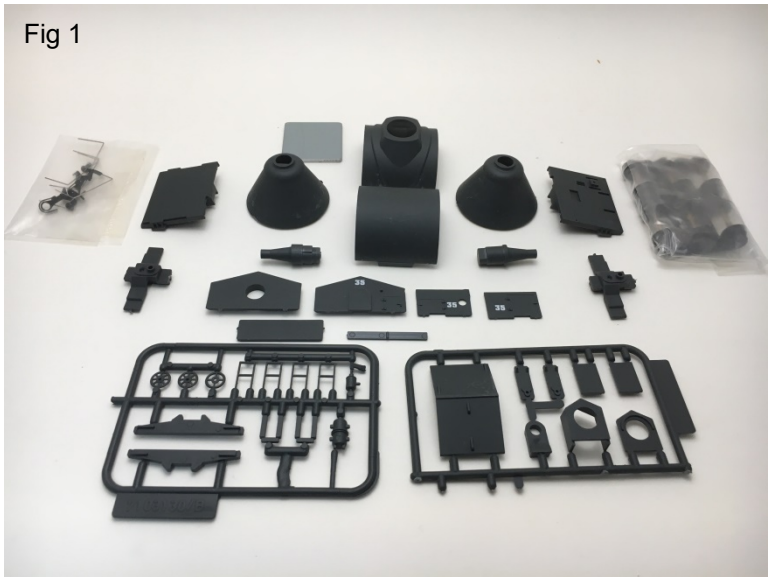


Fig 1

Fig 2

I'm using the basic ST&D dress up kit for Walthers hot metal cars which includes a spout, bib, and bearing shields, Fig 2. The bib is a great addition to the kit for looks but it also helps to hide the cuts that are made when fitting the ST&D spout onto the Walthers car.

The biggest part of this project is removing the original spout on the Walthers car. I did this using a sprue cutter. Using sprue cutters gives more control over the cuts. (Fig 3) With the original spout removed I sanded the area smooth and remove any high areas that were left. (Fig 4)


Fig 3


Fig 4

I test fitted the ST&D spout to see how much of the opening needs to be widened to let the spout slide in (Fig 5). This step can be done different ways. On the first couple spouts I did, I used a dowel rod with sanding paper wrapped around it. I found later using a mini tabletop drill press makes short work of this step. If a drill press is used take your time, and take a little off each time on each side of the barrel and keep test fitting the opening with the ST&D spout. Fig. 6 shows, the opening sanded out large enough for the ST&D spout to fit.

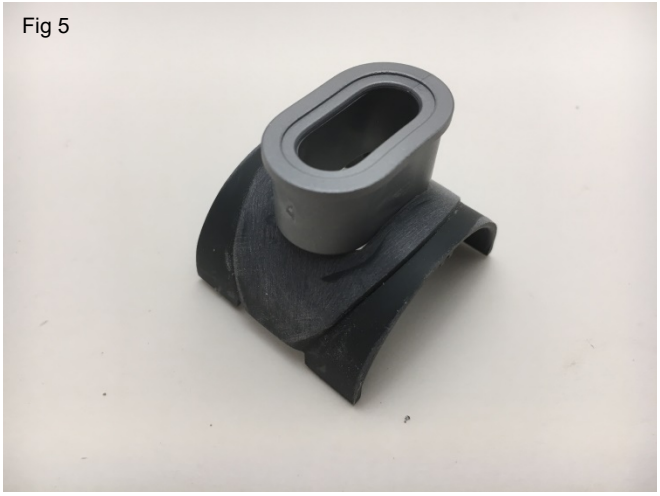


Fig 5


Fig 6

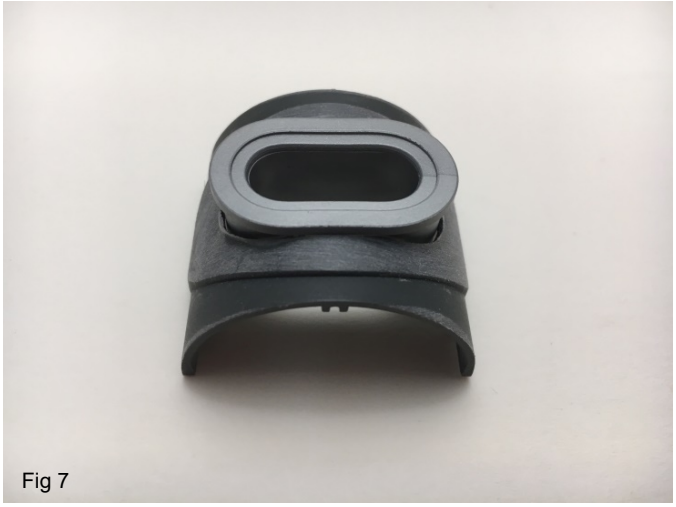


Fig 7

Fig. 7 Shows the ST&D spout being test fitted into the Walthers barrel. If care is taken and to add variety to car types at this point you can leave the bib off and fill around the edges of the spout with putty.

Both halves of the barrel are glued together, before attaching the bib and spout to the barrel. I found doing this to be the easiest way before the bib is glued onto the car so the curvature of the car and the bib can be kept. The bib is placed on the car and the ST&D spout is slid into the opening. Four short pieces of .020 square styrene (Fig 8) was cut to be placed on the outside edges of the bib to keep the edges level with the raised portion of the barrel on the Walthers car that was not removed.

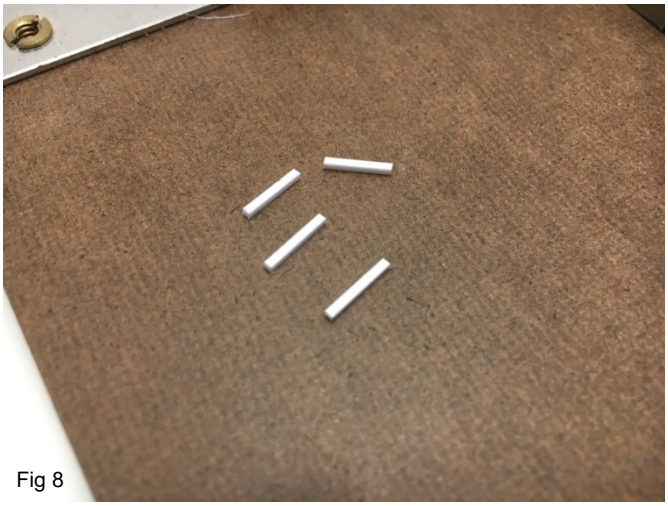


Fig 8

Fig 9

I then put glue on the part of the barrel the bib will rest on, and using zip ties I snug the bib down to the car. Using Zip ties make the bib follow the curvature of the barrel and also gives a chance to even up the edges of the bib with the edges of the car. I also use a clamp and lightly clamped the center of the bib down to the car to help hold everything together and flush  Fig 9.

The final shot of the barrel before assembling the rest of the car. Fig 10

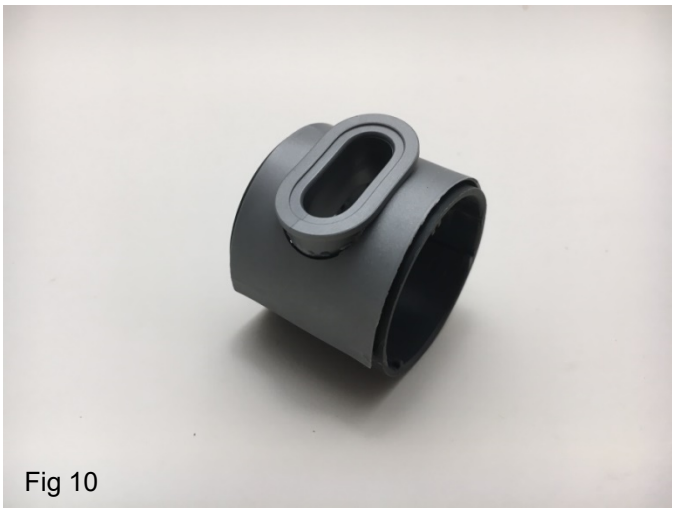


Fig 10

Fig 11

The rest of the hot metal car was assembled per the instructions provided by Walthers. The car in Fig 11 & 12 represents a new car being delivered to D&D Steel.

Overall this is a simple project that can be done on one car or multiple cars in one evening with the results well worth the work.

**Built Time:**
One evening

**Tools:**
Sprue Cutters
Fine grit sandpaper
Dowel rod or drill press
Glue
Zip ties
Clamps

**Parts:**
State Tool & Die,
Basic Walthers upgrade kit.

Walthers
Hot metal car

Plastruct
.020 square rod

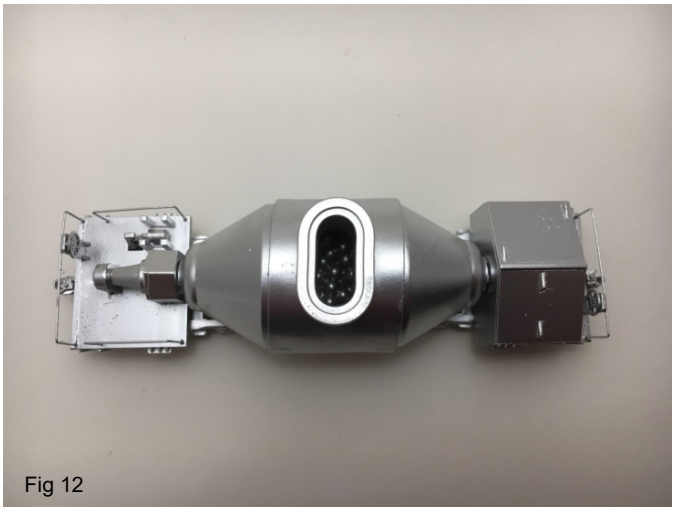


Fig 12

ST&D offers 3 different upgrade kits for the Walthers cars.

Basic Kit $4.00
Includes:: Spout, bib and bearing shields

Advance Kit $7.00
Includes:: Spout, bib, bearing shield and center section of the ST&D hot metal car.

Conversation Kit $11.00
Includes:: Spout, bib, bearing shield, center section and the tapered ends of the ST&D hot metal car.

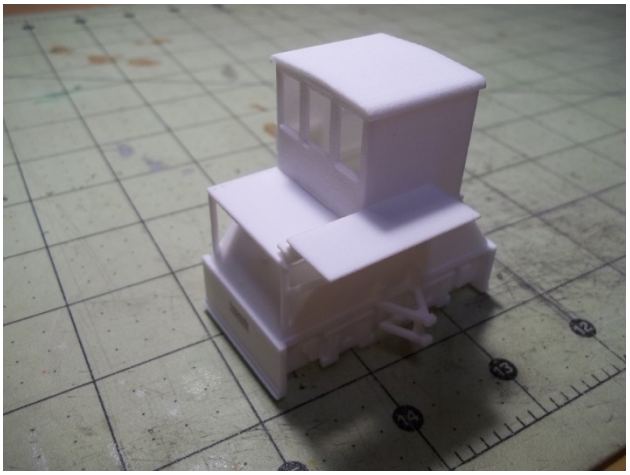
Shipping & handling is $6.00 per order.

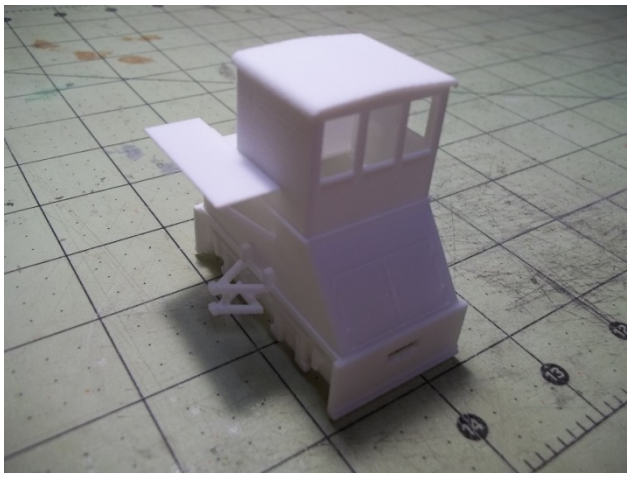
Upgrade kits are available by sending State Tool & Die Co. a check or money order to 4780 Briar Road, Cleveland OH  44135

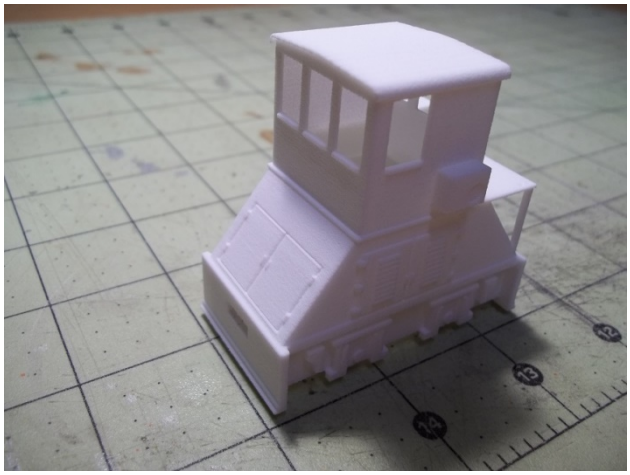
## Product Review

HO 3D printed quenching locomotive by Carsten Lunsten available through Shapeways

I was asked by Carsten Lundsten, to review his HO scale 3D printed version of a quenching locomotive that he modeled after his N scale version that he also created and offered through Shapeways. The quenching locomotive will be offered in 2 versions. I am reviewing the left-hand version due to where my quenching tower is located and the end, the quenching car will be coupled to on the locomotive.







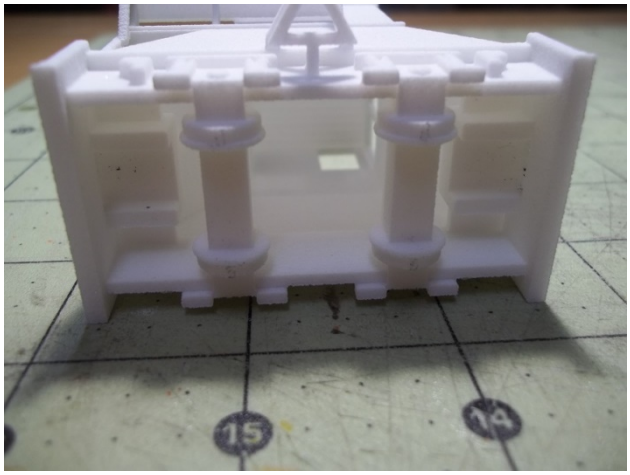
This model is 3D printed in white nylon plastic with a matte finish and slight grainy feel. The locomotive is a static model and measures in at 2 3/8 long, by 2 13/16 wide. This includes the platform that is on the oven side of the locomotive, the height is 2 ¼ from the top of the rail to the top of the locomotive.

The locomotive isn't modeled after any particular prototype, but there are a few quenching locomotives that have a similar body style. I was very impressed with the details of the locomotive and how sturdy it is. The printed posts, steps, and platforms, the parts that I would think would be flimsy are surprisingly sturdy.

Below the platform on the coke oven, side is brackets for electric pickup. (The platform on coke oven side of this sample is a little high compared to the bench where the coke guide would be on the coke oven. This has since been corrected and will be level with the bench.)

On the opposite side are doors for maintenance and an air conditioner. The truck details are also very well printed and the printed wheels are spaced the right width apart. The front of the locomotive does have a spot for a head light and a platform to access the control cab.  The rear of the locomotive has another set of maintenance doors. With the locomotive having a grainy feel some of the edges do need to be cleaned up. The locomotive could have been printed in a different material to make a smoother surface but that would have increased the price from $40 to $80

Coupler pockets are also printed into the locomotive with a pilot hole for screws. I used Kadee #58 couplers with a Kadee #232 gearbox. I cut the ears off the gearbox and it slides in the opening with no other modifications and the screw holes line up perfectly with the Kadee gearbox and the coupler is at the right height per NMRA standards.



The locomotive could be powered by removing the printed wheels and inserting a power train of their choice. Overall I'm really impressed with this model. Carsten has done a great job in modeling this quenching locomotive in 3D. With all the steel mill equipment out there this is the first quenching locomotive I know of that has been made available to the steel mill modeler.

I chose not to power my sample  but I did added a few additional details like wire handrails and grab iron, cut leavers and ladders.

## Around the Mill

Hot metal transfer train at former Inland Steel, now Arcelor Mittal, in East Chicago IL, taken in Aug 2016. This hot metal train goes to the A-M (former ACME) BOF in Riverdale. Photos were taken by Tom Stewart and used with permission.




## Steel Mill Related Videos

Green Frog Productions
*Styrene The Ideals, Tips and Techniques of Dean Freytag.

Pentrex
*Eastern Kentucky Coal

Pelts Express
*Bessemer & Lake Erie
*LTV Ore Lines

Prairie Works
*USS Duluth Works - Photo Video
*Super detailing a Walthers Blast Furnace Part 1
*Super detailing a Walthers Blast Furnace Part 2

Model Railroader's Dream - Plan - Build
* Railroads and Steel

Videotrain.com
*The Union Railroad

Any steel mill related videos that should be included on this list please send information to don_csx@hotmail.com

## Steel Mill Related Books

*Morning Sun Books
By Stephen Timko
Steel Mill Railroads in Color Vol #1
Steel Mill Railroads in Color Vol #2
Steel Mill Railroads in Color Vol #3
Steel Mill Railroads in Color Vol #4
Steel Mill Railroads in Color Vol #5
Steel Mill Railroads in Color Vol #6
Steel Mill Railroads in Color Vol #7
(Vol 2,4,5,6,7 are available through Stephen Timko smtimko@aol.com for $52 per volume)

Steel Mill Railroad Facilities and Equipment (eBook)

By Robert Wilt
Bethlehem Steel Company Vol #1, Obtaining – Transporting Raw Material, and Making Iron
Bethlehem Steel Company Vol #2 Making Steel, Finished Product Handling, and the Final Years
(Both Volumes are available through Stephen Timko smtimko@aol.com for $52 per volume)

By Richard C. Borkowski Jr.
Union Railroad In Color

*Model Railroader
By Bernard Kempinski
The Model Railroader's Guild to Steel Mill

*The Railroad Press
By Nevin Sterling Yeakel
Bethlehem Steel

*Plastruct
By Dean Freytag
The Cyclopedia of Industrial Modeling

*Walthers
By Dean Freytag
The History of Making and Modeling of Steel

Any steel mill related book that should be included on this list please send information to don_csx@hotmail.com

## Steel Mill Related Websites

**Groups**
*Steel Mill Modelers Special Interest Group
http://www.smmsig.org/

**Facebook:**
*Bessemer Subdivision
https://www.facebook.com/groups/787429424621662/?fref=nf
*Bessemer and Lake Erie Railroad Sightings Page
https://www.facebook.com/groups/1029716723816394/
*Birmingham Southern-Fairfield Southern
https://www.facebook.com/groups/337021349697833/
*BSRR/FSRR
https://www.facebook.com/groups/471524686212350/
*Coal Critter of Kentucky
https://www.facebook.com/groups/446906699000395/
*Harrisburg Terminal Railroad
https://www.facebook.com/Harrisburg-Terminal-Railroad-271356453384157/
*Chicago Area Steel Mills
https://www.facebook.com/groups/1679894998965838/
*Hot Metal Trains
https://www.facebook.com/groups/1143908999010704/
*J&L Narrow Gauge Railroad
https://www.facebook.com/groups/rolling.ingot/
*Munhall, Bessemer and Port Perry
https://www.facebook.com/munhallbessemerandportperry/
New Boston Steel Mill and Coke Plant
https://www.facebook.com/groups/349284928484151/
*The Splitrock Mining Company layout
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*Steel Mill Pictorial
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*U.S. Steel Duluth Works
https://www.facebook.com/groups/101591233225098/
*Youngstown Steel Heritage
https://www.facebook.com/SteelHeritage/

**Photographs**
*2007 Steel Mill Modelers meet
http://www.pbase.com/jtunnel/2007_steel_modelers_meet&page=1
*Arthur's Albums and Images
http://www.rmweb.co.uk/community/index.php?/gallery/member/6861-arthur/
*Birmingham Rails
http://www.bhamrails.info/
*Rick Rowlands
https://www.flickr.com/photos/33523379@N03/sets/
*The Rust Jungle
http://www.therustjungle.com/

**Layouts:**
*Acme Steel Riverdale BOF & Chicago BF Modeled in HO scale(1/87**)**
http://www.trainweb.org/chicagosteel/index.htm
*Bethlehem Steel Layout
http://www.brokenbushandroundtop.com/bethlehemsteel/
*Columbia River Steel Corporation
http://www.prairie-works.com/crsc.html
*Dave Scale Modeling
http://daveayers.com/Modeling/
*DK Recycling
http://www.frankshuette.de/
*Forsten Online
http://www.stahlbahn.de/index.php
*Harrisburg Terminal Railroad
https://www.facebook.com/Harrisburg-Terminal-Railroad-271356453384157/
*Pittsburgh and Western Railroad - Paul Lapointe
http://www.coaldivision.org/pittsburgh_and_western.html
*Pittsburgh, Youngstown & Ashtabula RR
http://www.pyamodelrailroad.com/
*Stahlbahn
http://www.stahlbahn.de/index.php
*Republic of Train World
http://trainworldcity.webs.com/apps/blog/show/43914314-the-trainworld-city-steel-works-and-duluth-works-

**Blogs**
*KV&O and D&D Mining & Steel
http://doncsx.blogspot.com/
*Musser Steel Mill
http://mussersteelmill.blogspot.com/

**Hobby Shops**
*Industrial Model Shop
http://industrialmodelshop.com/
*Joswood
http://lasercut-shop.de/Joswood-Ltd
*KenRay Models
https://kenraymodels.com/
*State Tool & Die
http://www.statetoolanddie.com/

**Yahoo Groups**
*Harrisburg Terminal Railroad
https://groups.yahoo.com/neo/groups/htrrco/info
*Steel
https://groups.yahoo.com/neo/groups/steel/info

**Manufactures**
*Adair Shops
http://adairshops.net/index.php
*FireCat Designs
http://www.firecatdesigns.com/home.html
*Plastruct
https://plastruct.com/
*State Tool & Die
http://www.statetoolanddie.com/
*Steel Mill Modelers Supply
https://www.facebook.com/steelmodelerssupply/

**Museums**
*Youngstown Steel Heritage
http://www.todengine.org/

**Podcast**
*A Modelers Life
https://www.amodelerslife.com/
*Model Railroad Hobbyist podcast
http://model-railroad-hobbyist.com/podcast/episodes
*The Roundhouse
http://theroundhousepodcast.com/

Any steel mill related website that should be included on this list please send information to don_csx@hotmail.com