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STEAM IN THE GARDEN

In this issue.....

A Catalog Baldwin
A Tale of Two Servos
John Tribe's Track
Model T Rail Truck
and lots more.....

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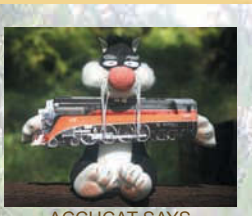

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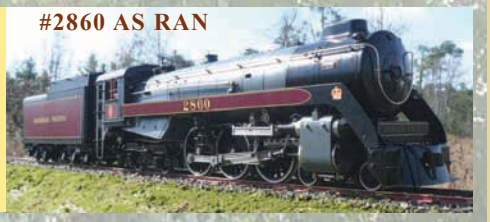

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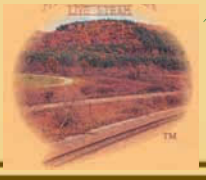

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STEAM IN THE GARDEN

Vol. 19, № 4
Issue № 106

Gather, friends, while we inquire, into trains propelled by fire...

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FRONT COVER:

British Invasion on July 4th at the Stapleton's! An Aster King George V with a rake of Wrightway GWR Collett coaches meets an Aster LNER A4 Silver Link with Finescale Locomotive Co. Gresley teaks in tow.

Photo by Mike Oates

Editor
Ron Brown

Priceless Assistant
Marie Brown

CAD & Other Drawings in This Issue
Dan Rowe, Howard MacCulsay,
John Tribe

Regular Contributors
Larry Bangham ..... California
Carl Berg..... New York
Paul Blake..... Australia
Tom Bowdler ..... New York
Keith Bucklitch..... England
Jim Fainges ..... Australia
Les Knoll ..... Illinois
Joe Leccese ..... Massachusetts
Jim Pitts ..... South Carolina
Jerry Reshew ..... Mississippi
Dan Rowe ..... Texas
Jeff Young..... Canada

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CALENDAR OF EVENTS

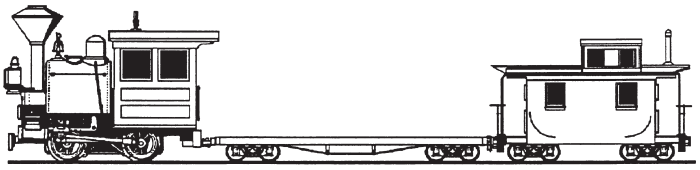
Southern California Steamers - contact Sonny Wizelman for dates, places and any other pertinent information. 310-558-4872 - sonnyw04@ca.rr.com

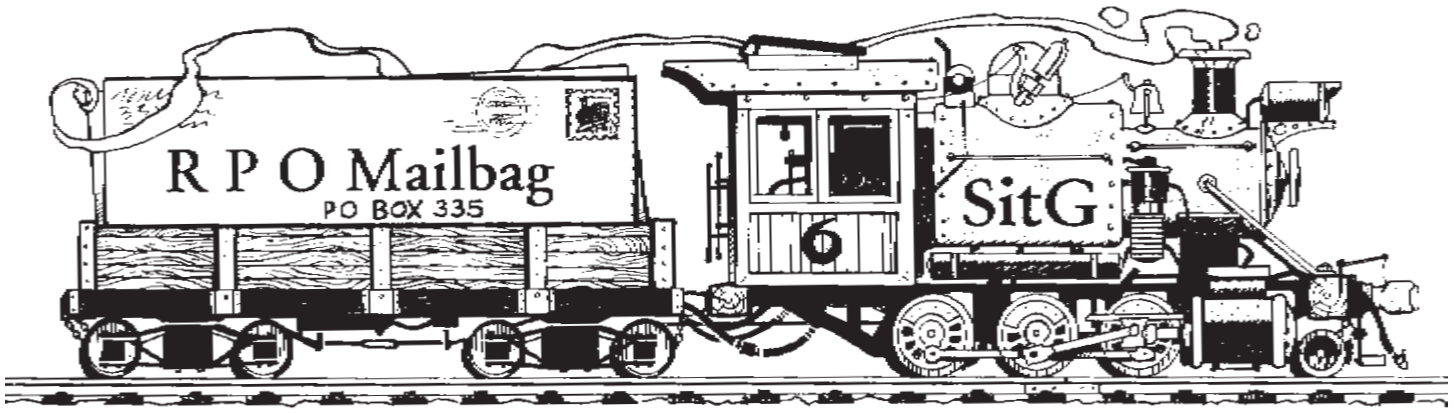
Michigan Small Scale Live Steamers (MSSLS) hosts a large number of steamups. For details on What, When and Where, go to their web site at http://www.mssls.info/

Upstate Steamers, upstate New York steamup calendar. If you are in the area, come out and join us! http://gold.mylargescale.com/Scottychaos/upstatesteamers/

Puget Sound Garden Railway Society steamup schedule: We have 2 steamups per month, one at the Georgetown Powerplant in Seattle on the second Saturday of every month, and a steamup at a member's track on the fourth Saturday of the month. Here is a link to our steamup timetable. http://psgrs.org/livesteamtimetable.html

Check our web site < www.steamup.info > for up to the minute Calendar of Events.





Virginia, USA
via e-mail

Dear Ron,

Delivery of your May/June issue was timed perfectly. I demonstrated my K-27 to visitors right after the magazine arrived and low and behold, the water level sight glass broke during cool down after the run. Steve Baker's workshop project article on Page 38 gave me a head start. But, there were two tricks I learned from Ryan Bednarik that Steve did not mention. First, the original Accucraft provided sight glass was not an even 5 mm, but 4.8 mm. When I fitted the new 5 mm borosilicate glass tube, I found that the holes in the retaining collars (gland nuts) did not provide the needed space for the glass to expand or for the O-ring to float. As Ryan suggested, I reamed out the hole to provide about 1000ths of an inch clearance between the glass and the collar. Second, I learned from Ryan that while installing the glass, merely hand tighten the collars, then give them an easy 1/8th turn with a wrench. I did this and the glass did not break, nor were there any seeps, weeps or leaks. During disassembly of the broken glass, I found it strange that the original tubing was less than one mm thick and probably not borosilicate. I suspect that's why it crazed after much use and easily broke.

Thanks for your good work and thanks to Steve for his timely submission.

Carl Weaver

* * * * *

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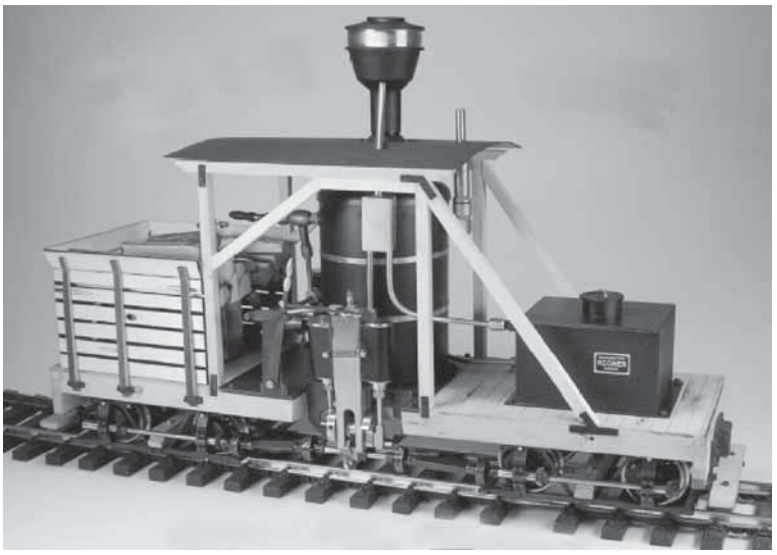
WHAT'S NEW?

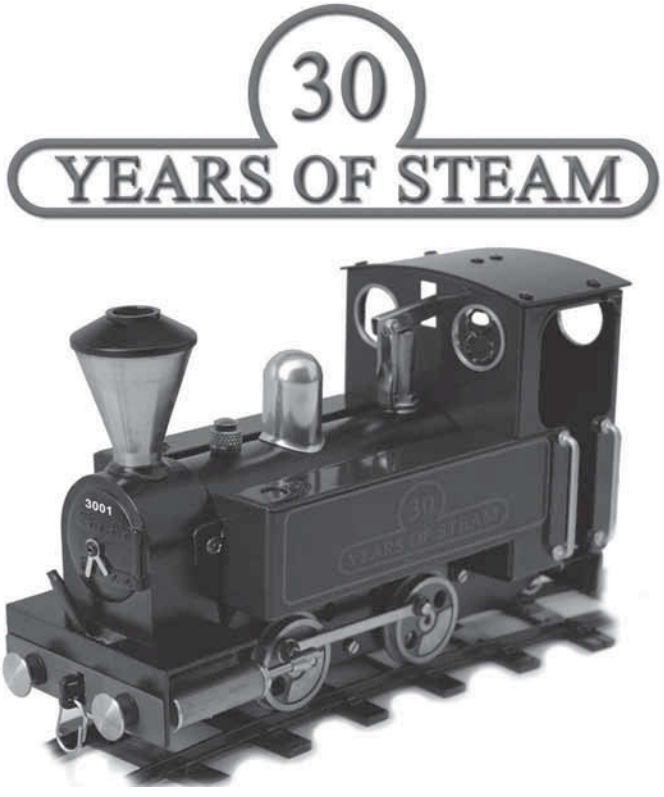
The Train Department, has just received a shipment of the new Regner Vertical Boilered Shay. It features twin oscillating cylinders, 4:1 gear reduction for realistic speeds, water glass, boiler refeed system and pressure gauge. It will run on 4 ft. radius curves. The Shay is available in kit form or fully assembled. For more information or to place your order, contact The Train Department at 757-855-6364 or go to their web site at www.traindept.com



TD-248 Unions, Large

Trackside Details, 7070 N. Harrison Ave., Pinedale CA93650 - phone 559-439-0419, has just introduced 3 new sets of brass detail castings. TD-248 Unions, Large, TD-249 Elbows, and TD-250 Air Brake Fittings. As is always the case with parts from Trackside Details, the castings are clean and crisp and nicely detailed. Contact them for a color catalog showing all the detail parts they have available.

TD-250 Air Brake Fittings



TD-249 Elbows

As a tribute to mark 30 years of steam from one of the most successful garden railway loco designs, Devon based Dream Steam have announced they are planning a new limited edition of 30 modified MSS 0-4-0 side tank locos available to the collector from October 2009. Launched in 1980 this loco design, along with its rolling stock and track system, was the last product range developed under the Malins Family, the creators and former owners of Mamod, before the company was sold. Made under the Mamod label until 1989 this same original design is still going strong and has continued to be produced by MSS using much of the original tooling. Alan Dunster, proprietor of Dream Steam says "whilst 30 years old this loco still has a pleasing aesthetic that typifies the Malins design heritage of that era and its enduring appeal persists under the MSS label today". He goes on to say "We thought as a tribute to this UK manufacturing success story we should mark the occasion with a limited edition; acknowledging the influence this design has had on

the live steam garden railway hobby over the last three decades". This limited edition is expected to be available from October 2009, with early pre-orders being taken now to secure one of only 30 to be made. The price of the loco will be £219.99 and will include royal blue and red lined livery with special side tank graphics, original shaped dome, brass spark arrester chimney, original red wheels, sequential smoke door numbering from 3001-3030, certificate, presentation box and special booklet on the history of the loco. Dream Steam specialise in MSS and early Mamod railway sales and service, parts and upgrades. Customer contact details: Dream Steam. PO Box 360. Plymouth. PL3 6BD. Tel: 07816 753351. Email: sales@dream-steam.com Web: www.dream-steam.com

Crescent Models is proud to introduce a new product named the Wasserturm. It is a 1:32 scale model water tower. See our ad in this issue for more details.

Cliff Notes: How to Fire a Steam Locomotive

by: Kent Killam

There are thousands, maybe millions of people worldwide who enjoy running electric trains, some of which will include computerized sound systems to emulate their full size counterparts. While electric trains are fun, it isn't the same as the living, breathing, chuffing machines of Live Steam. The engineer needs to remember that steam locomotives operate by boiling water, through the use of fire. With that being said, steam engines take time to heat and build to operating pressure as well as cool down when finished. There is no on/off switch on live steam as on electric trains. The possibility of something going wrong is possible. And the most important detail to keep in mind - SAFETY FIRST!

There are three main tasks to be completed before firing a steam locomotive, and they will be described using a three axle, 0-6-0 locomotive manufactured by Accucraft. It is strongly suggested they be completed in specific order; Oil, Water, Fuel. The reasoning will be explained later, and a sure fire way to remember the order OWF is: Oh What the Fudge.

The first step is inspection and lubrication. Start by taking the time to completely go through all the running gear and steam fittings, checking for loose nuts or connections, tighten as needed. Then turn the engine upside down using a foam cradle to protect it. Apply a small amount oil to both sides of each axle. Flip the engine to one side, and apply oil to each and every moving connection of the drive rods, connecting rods, and the valve gear assembly. Once completed, turn over the locomotive and repeat the process for the other side. Place the engine right side up and remove the cap of the displacement lubricator, located in the right side of the cab. Insert a small syringe and suck out all the water accumulated in the bottom and discard into a Grunge Can. Top off with fresh steam oil and replace the cap. This completes Step one.

Step two is Water. Remove the plug from the top of the boiler, just inside the cab. Fill the boiler to capacity with distilled water, then remove 30cc of water with a syringe and discard. The reason for removing the extra water is to create a chamber of air for steam pressure to build in. Tap the site glass at the back of the boiler a few times to ensure no air bubbles are trapped in the tube, then replace the boiler plug.

Step three, Fuel. The tank is located in the cab on the left, with a small brass valve. Place the butane can over the valve tip and press down. Filling the tank may take a minute or two. When full, vapors will blow back from the valve. Remove the butane can, wait a few minutes for the fuel to settle, then top off.

The locomotive is now ready to fire. Begin by opening the fuel valve until there is an audible hiss of gas, ignite the stack with a barbeque lighter. Once the burner is lit, the hissing sound will have taken on a much deeper tone, almost low roar. After a few minutes the pressure gauge should start climbing. Monitor until 40 PSI is reached, then turn the burner down until a faint sound is heard.

Place the Johnson bar in reverse and slowly open the steam valve, located at the top center of the boiler backhead. This will expel condensate from the cylinders. Turn off the steam, move the bar forward and slowly open up the steam valve again. The engine will begin to move forward, spitting out the remaining water from the cylinders. Within a few seconds the locomotive will be running on fresh steam and increase in speed. As the boiler heats up, the warmth in the cab will cause the butane to expand in the tank, resulting in the need to monitor gas flow. Walk with the locomotive, reducing fuel as needed. At this point the engineer will be driving a train, and with practice can learn the fine tuning needed for extended running times.

The reason Oil is first is to ensure vital parts pass inspection and lubrication to reduce wear of moving pieces. Water is second because it is unsafe to fire a dry boiler. Possible side effects could be physical injury to people or critical damage to the engine. Finally Fuel, only to be added after oil and water have been completed. By following the OWF rule on a constant basis, the engineer ensures not firing a locomotive that hasn't been properly prepped.

Workshop Project

A Catalog Baldwin

by Mike McCormack
Hudson, Massachusetts

In the heyday of the great steam locomotive builders, they all enjoyed a large export business. In order to encourage this business, the builders issued catalogs of stock designs that, in the case of the Porter Company, were kept in stock for quick delivery. To keep confusion to a minimum when receiving an export order, the various styles of locomotives were given code words. The use of this code word in a letter or telegram to the builder would order you a complete locomotive of the type shown in the catalog. All you had left to do was specify color and lettering style, method of payment and method of shipment. In a short amount of time your locomotive would be on its way to you. For instance, in the case of Porter Locomotives, the code word "RECOIL" would get you a 2-4-2 side tank locomotive with 30" drivers, 8" x 14" cylinders, and a hauling capacity of 645 tons on level track.

In 1898 the Lynton and Barnstable Railway in England found itself short of motive power. Finding that all the English builders had full order books, the directors decided to order a catalog 2-4-2 locomotive from the Baldwin Works in Philadelphia. This engine was shipped in due time and was put into service on the line. In 1907 she was rebuilt and many changes were made to the locomotive details, including the smoke box door, coal rails, and a new boiler. This rebuilt locomotive is the version that Accucraft

Before modifications.

photo credit: Tag Gorton - Atlantic Publishing

Trains decided to offer a few years ago in both Southern green paint as well as locomotive black. I have always liked the look of this little locomotive and decided that I could use a 2-4-2 on my Cuban sugar plantation Central Rincon. What follows are the steps required to convert this model from an English countryside locomotive to a Cuban cane hauler.

The first step was to scope out the required changes.

1. Convert fuel from coal to oil. Oil is the dominant fuel in Cuba for steam locomotives.

2. Change the Ramsbottom style safety valve to the common North American dual safety valves. At the same time, make provision for a whistle on the steam dome.

3. Add a North American style bell.

4. Modify the cab roof to remove the English style details and add a conventional cab roof vent.

5. Add a generator and headlight to the smoke box as well as a new North American style smoke box door.

6. Add pilots and footboards.

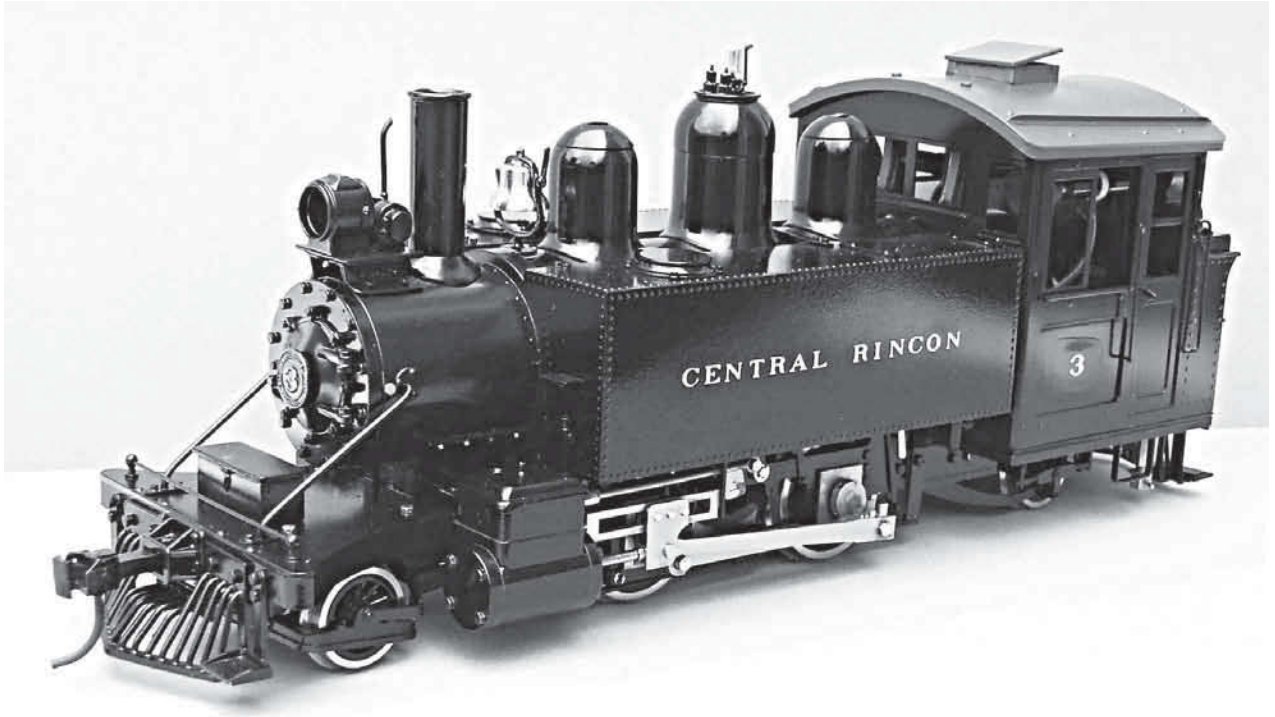
7. Add miscellaneous details such as a tool box on the pilot beam, backup headlight, etc.

8. Convert to radio control for the throttle with reversing to remain manual.

9. Convert the Accucraft lubricator to a Roundhouse type lubricator.

This is probably a good time to comment on the above item. My friends and one in particular who will remain nameless (you know who you are) are aware that I like to keep my locomotives in a "used but not abused" state of cleanliness. That means wiping down the entire locomotive after each run. It has been my experience with several Accucraft locomotives that their displacement lubricator is overly generous in dispensing oil into the steam line. This means gobs of oil shooting out of the stack and coating the locomotive, which then takes a long time to clean. To get around rebuilding the Accucraft lubricator I substitute a Roundhouse Engineering displacement lubricator. You do lose the ability to drain the lubricator from the bottom, but I'm so used to using a syringe to drain my lubricators that it is not an issue for me.

So let's get started with the pilot details. The

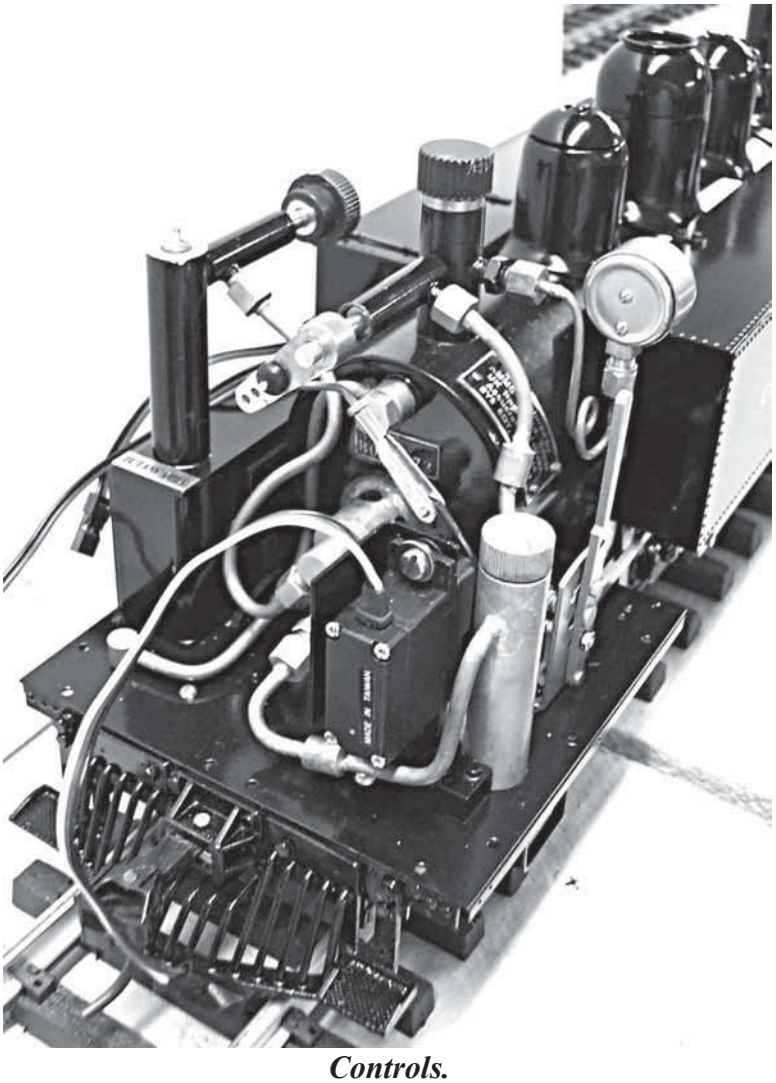


After modifications. Ready to haul some sugar cane! Worth all the effort? Absolutely!

Bunker modifications.

Headlight, generator, stack & bell.

Smokebox door.



Controls.

first items to remove are the vacuum brake stands and pipes. Typically, a Cuban locomotive in plantation service would be equipped with steam brakes. Next, I carefully removed the pilots and then squared off the scalloped edge front plates. I then added Trackside Details #TD-196 pilots and #TD-116 pilot steps. To obtain these parts and others mentioned in this story, consult the suppliers list at the end of the article. To support the Kadee #1 couplers, which I prefer due to their smaller size as compared with the G scale versions, I used #TD-197 coupler pockets. The Kadee couplers are the plain shank style, which do not use centering springs. To me, the loss of centering is not critical, as this locomotive is not intended to be used in switching operations. These couplers are mounted by drilling a #2 clearance hole (#43 drill) in the coupler shank. The pocket is drilled #2 clearance on the top of the casting and #2 tap (#50 drill) on the bottom. A 2-56 hex head bolt secures the coupler in the pocket. The pilot and pilot steps are secured by using #1-72 and #2-56 hex head bolts.

The pilot deck called out for something to fill all that empty space. I decided to mount a #TD-155 toolbox there. This was mounted by soldering a brass plate in the base of the casting and then drilling and tapping for a #2-56 screw from underneath the pilot deck. The front truck center bearing is a #2-56 screw with two "scale" size #2-56 hex nuts.

The smoke box door with its typical English two-handle locking lever needed to be changed. I have seen photos of Baldwin-built locomotives that did use the supplied style of smoke box door, especially on a group of engines that were supplied to the sugar cane plantations of Hawaii. In the end I decided to fabricate a new smoke box front out of a piece of 6061 aluminum rod and a #TD-185 smoke box door casting. The front number plate is a #TD-71 casting. #1-72 hex head bolts around the perimeter finish the job. The smoke box front is attached to the smoke box using a #2-56 screw on either side. I know that some of you are asking, how do you light the burner if you can't open the smoke box door? So here's the answer: Expand the existing hole on the bottom front of the smoke box. This hole will allow the flame from your lighter to enter the smoke box and light the burner. It works great, and no more loose, floppy smoke box doors.

The next work done on the smoke box was to add a headlight platform to support the generator and headlight castings. The platform is a #TD-107. I used #1-72 hex head bolts to attach it to the top of the smoke box. The generator is a #TD-96 casting, and the headlight is a #TD-13. This is a modified oil burning headlight. I cut off the old top vent and smoothed the surface off. I wanted the headlight to look like an oil lamp that had been converted to electric at some point after the locomotive had been delivered.

I was undecided about the look of the smoke stack base. To my eye, it looked very "English". I'm not sure if it was rebuilt in the Southern Railway shops when the locomotive was overhauled in the 1930s or if it was done by the L&B shops in the 1907 overhaul. I finally decided to make the base a bit smaller so as to look more "American". This was done in my Sherline lathe after the nut holding the stack in place inside the smoke box was removed. For those without a lathe, you could chuck it in a portable drill and use a file to bring it down to size. The final smoke box modification was to remove what I assume was the steam brake exhaust pipe running from the cab, along the top of the side tank, to the smoke box. The resulting hole in the smoke box was filled using J-B Weld. Use the slow set type, not the five-minute version. The slow set type is very resistant to heat. I have had great luck with this material to attach detail parts to live steam engines.

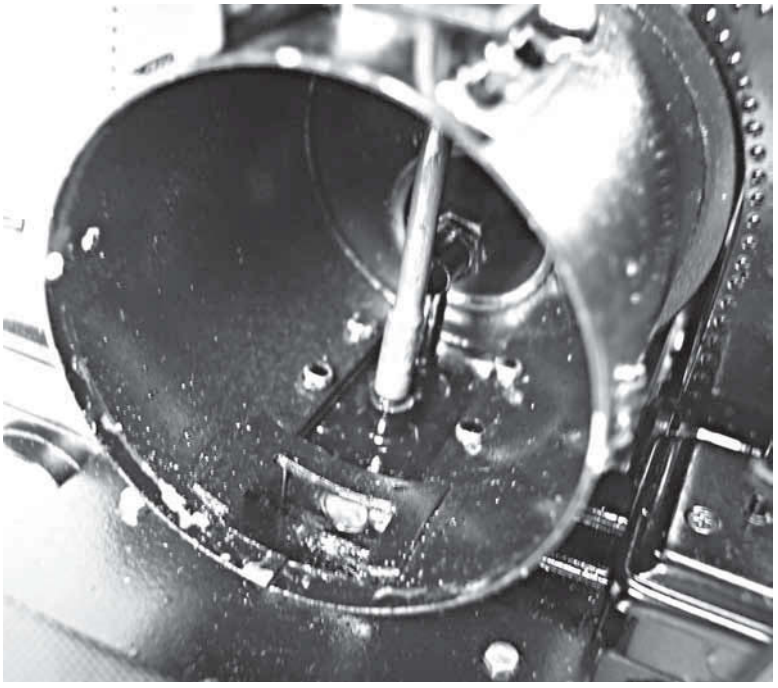
The next detail to add is the bell. This is a #TD-181 casting. This was attached to the boiler using J-B Weld after filing away the paint down to the copper at the chosen location.

I next tackled the steam dome with its Ramsbottom style safety valve. The top insert of the dome simply unscrews. This allows the removal of the dummy Ramsbottom safety valve by loosening the base screw. To replace this safety valve I used two #TD-43 safety valves. I also used a #TD-87 whistle. These were mounted by drilling the appropriate sized holes and securing them with J-B Weld.

The next area to work on is the cab. Here we need to remove some soldered on detail. This includes the "LYN" nameplates on the side of the cab as well as the peanut whistle and sliding cab roof hatch. This work is accomplished with a Bernz-O-Matic style propane torch on a low flame. A little gentle heating, taking care to avoid blistering paint on the cab roof, will soon have these parts removed. Needle files and sandpaper will smooth off the area so that the new cab roof hatch can be mounted and the remaining surfaces made ready for paint. The cab roof hatch is a #TD-108. I soldered mine in place. On other locomotives that I have worked on, I have used J-B Weld. Both work equally well.

The next area for modification is the bunker. The model is set up for coal as the fuel of choice. The

bunker has coal rails which were removed with a cut-off wheel in my Dremel tool. Use needle files to smooth off the top of the bunker where the rails had been soldered. Now it's time to fabricate the oil bunker, or rather the top of the oil bunker. This unit is sized to be a snug fit so that it is removable yet stays in place during operation. This bunker will also serve as the R/C antenna for the Spektrum radio receiver. The bunker is made of .025 brass bent into a rectangle with a top plate soldered on. The oil hatch is a #TD-37X casting soldered to the top plate. The headlight is the same modified unit as used on the front of the locomotive soldered to a #TD-136 generator platform casting. The platform casting is bolted to the top of the bunker using 0-80 hex head bolts and nuts. On the underside of the bunker I attached the antenna lead wire to one of the screws holding the headlight platform to the bunker. The wire is routed through the existing hole in the "top" of the bunker. I spliced a quick disconnect connector into this wire so that the bunker could be easily removed from the locomotive. Before continuing with the R/C part of this article, I would like to address the installation of the replacement displacement lubricator.



Smokebox modification.

The replacement unit is a standard Roundhouse Engineering part that is available from their Home Builder parts range. It is item number "LUB". To change out the lubricator you need to first remove the Accucraft drain screw fitting that extends down under the engineers (American, English fireman's) side of the cab. This is done by unscrewing the drain extension (hex brass fitting). When this is done loosen the couplings at the throttle and down at the steam line where it enters the boiler flue next to the gas burner assembly.

With the lubricator free you can remove it from the cab. Since the Roundhouse lubricator uses Model Engineers threaded fittings (1/4 x 40 ME) and the Accucraft lubricator uses metric threads we need to do some surgery to adapt the Roundhouse unit. The easiest way in my mind is to remove the fittings from the Roundhouse unit and replace them with the metric fittings from the Accucraft unit. To do this, use a jeweler's saw to cut off the fittings from the Roundhouse unit about 1⁄2 inch from the end of the pipes. File the burrs off with a needle file and do the same surgery to the Accucraft unit. Now, splice the Accucraft fittings to the Roundhouse unit by taking a piece of 1⁄4 inch brass rod cut to about 3/8 inches long. Drill 1/8 inch through the length of the rod. We now have a "coupling". Clean carefully and braze, using EasyFlo 45 silver solder and the proper flux. I use a Bernz-O-Matic torch for these small jobs. Since we are depending on a brazed joint with no mechanical strength, you should use silver solder, not "silver bearing" or plumber's solder. You can now clean the joints and bend the pipes so that they reconnect the throttle and the steam supply line. The copper pipes will bend easily until they work harden and get difficult to bend. If this happens, simply reheat the pipes for a minute to anneal them so they are easy to bend once again.

Now for the electronics. As I mentioned previously, the throttle is radio controlled and the reversing lever is still worked manually. I have converted over to the Spektrum DX6 system so as to eliminate the "glitching" that is common to both AM and FM systems. The AR6000 receiver is mounted in the cab on the bunker back wall using Velcro. The throttle is activated using a Hitec S-310 miniature servo connected to the throttle with standard R/C linkage. You will need to fabricate a mounting bracket to hold the servo. Mine is bent up from a piece of .032 brass. The servo is mounted using DuBro mounting hardware from my local hobby shop. The battery pack (four Nicad "A" cells) is mounted to the (American) fireman's side tank. It is held in place with Velcro. An on-off-charging toggle switch is mounted on the

bottom of the side tank. Be careful when choosing a spot for this switch so that it doesn't foul the valve gear or some other vital item. The charging socket is in the cab. I used miniature wire ties to fasten it to the gas tank piping so as to keep it out of the way.

With all the modifications done, it was time to paint. I used the dishwasher to clean all the pieces and sprayed the raw brass and aluminum items with automotive etch primer (Dupli-Color brand) from my local auto parts store. The cab roof is sprayed with Krylon Ruddy Brown primer which, to my eye, captures the "red lead" look common to steam locomotive cab roofs. The roof was oversprayed with Krylon Matte Clear to seal the paint and give the flat primer just a hint of gloss. I used Krylon Gloss Black, which nicely matches the Accucraft Gloss Black paint, to coat the new parts and any reworked areas on the locomotive. The lettering is done using Woodland Scenics Railroad Roman alphabet dry transfers. They were then clear coated using Krylon Clear Gloss spray. Use several light coats when you do this as one heavy coat can dissolve/distort the dry transfers. Don't ask me how I know that little fact.

So there you have it, an English locomotive that now looks like it belongs hauling sugar cane in Cuba. These techniques can be used on any locomotive that you may have in your collection. I know it takes a little bit of courage to slice and dice that shiny new and expensive steam locomotive, but nothing that you do is irreversible. But, beware. Once you start these kinds of modifications the bug will bite and you'll never be able to own a totally stock locomotive again. I know, I've been totally bitten by that bug!

SUPPLIERS

Detail Parts.....Warrior Run Locomotive Works, Nanticoke, PA 18634. www.warriorrunlocoworks.com

Lubricator.....Roundhouse Engineering Company, Doncaster, England www.roundhouse-eng.com

Fasteners.....Microfasteners, Lebanon, NJ 08833 www.microfasteners.com

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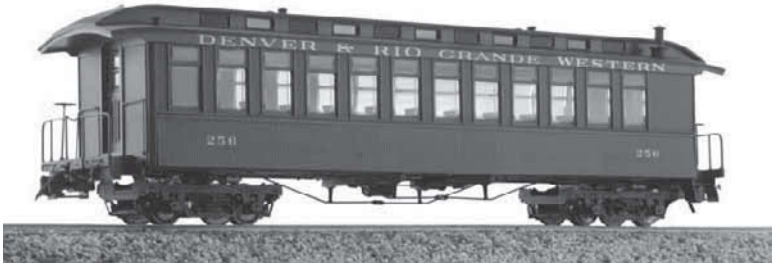

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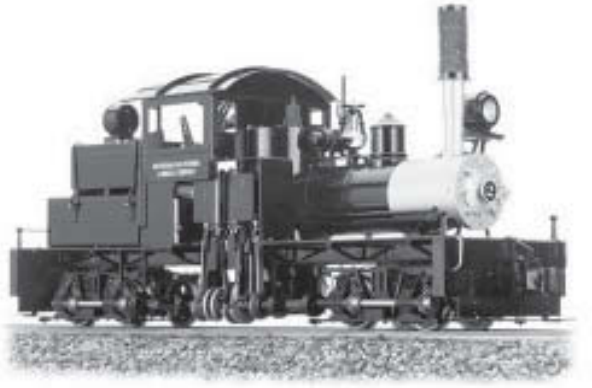

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Model T Rail Truck

by Larry Newman

One man's approach to building a steam powered rail truck

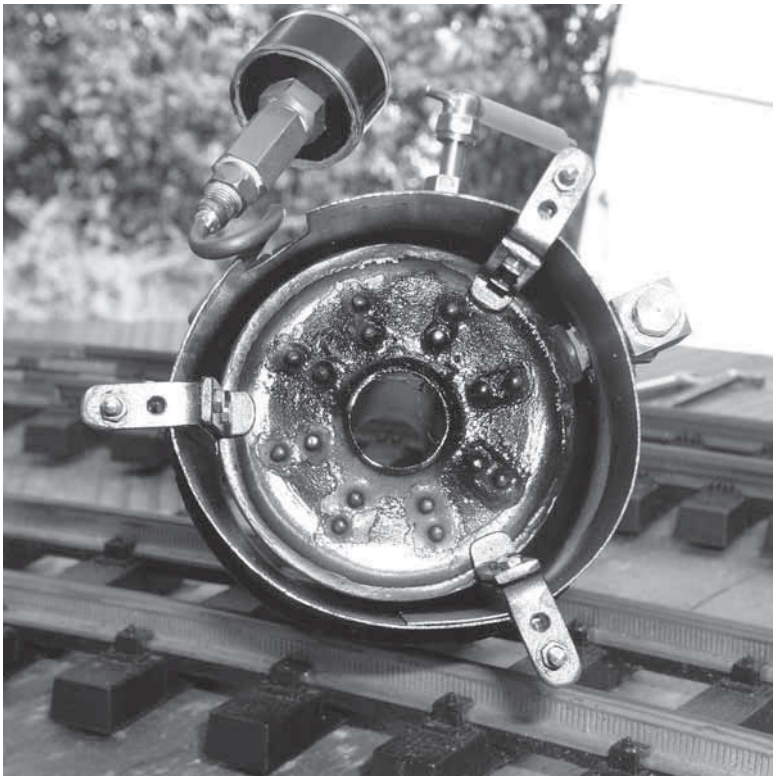
I built my first locomotive a couple of years ago, a live steam Mason Bogie built with parts from an Accucraft Ruby kit. As that locomotive progressed, fewer parts from the kit were used. This railtruck was my answer to the question; "What do I do with all these Ruby parts?"

I have been partial to C-cab Ford trucks since my younger days as a hot-rodder turned drag racer. This is my first steam powered "hot rod" Ford truck! I found the diecast truck on-line in an auction. It was listed as 1/24 scale but I feel that is a stretch of the facts. I only used the cab and built the truck to what I felt looked similar in size to the gasoline powered railtrucks that were used on a lot of narrow gauge railroads.

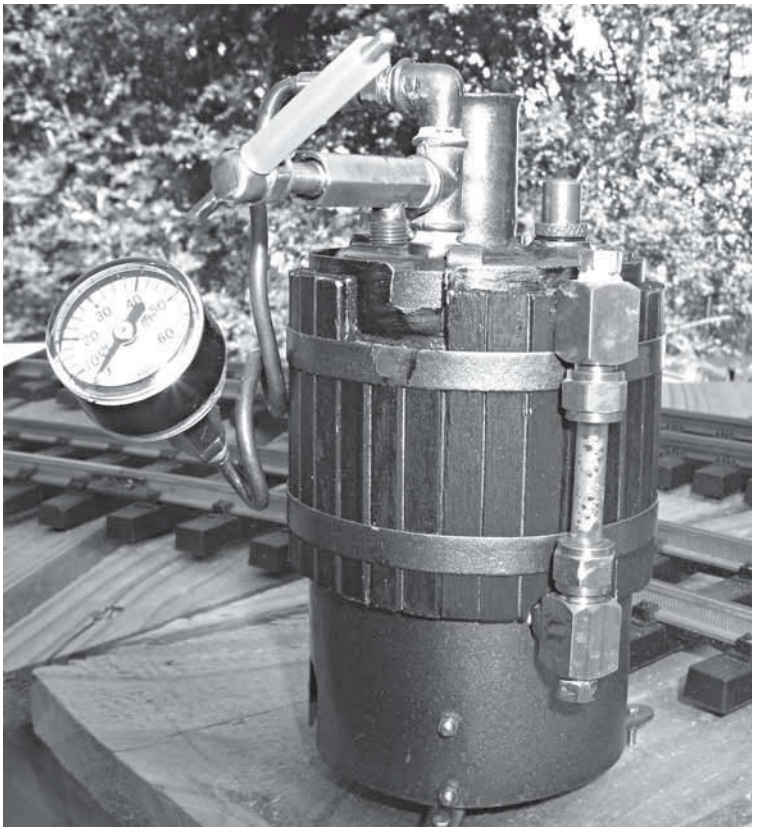
My original plan was to use a small Midwest kit boiler and oscillator, but this proved to not be powerful enough to do what I asked of it. My goal was to be able to pull a few ore cars and not struggle to get around a track. So the Midwest engine went back to the flea market at Diamondhead (where I purchased it). I decided to use the leftover Ruby cylinders from the Mason bash (leftover because I bought a set of 1/2 inch cylinders from Quisenberry Station). I did not have valves leftover, but a call to Cliff at Accucraft solved that problem.

My plan was to build a vertical boiler with a single flue. I studied as many plans as I could find for small vertical boilers. I built the boiler using "hedge-hog

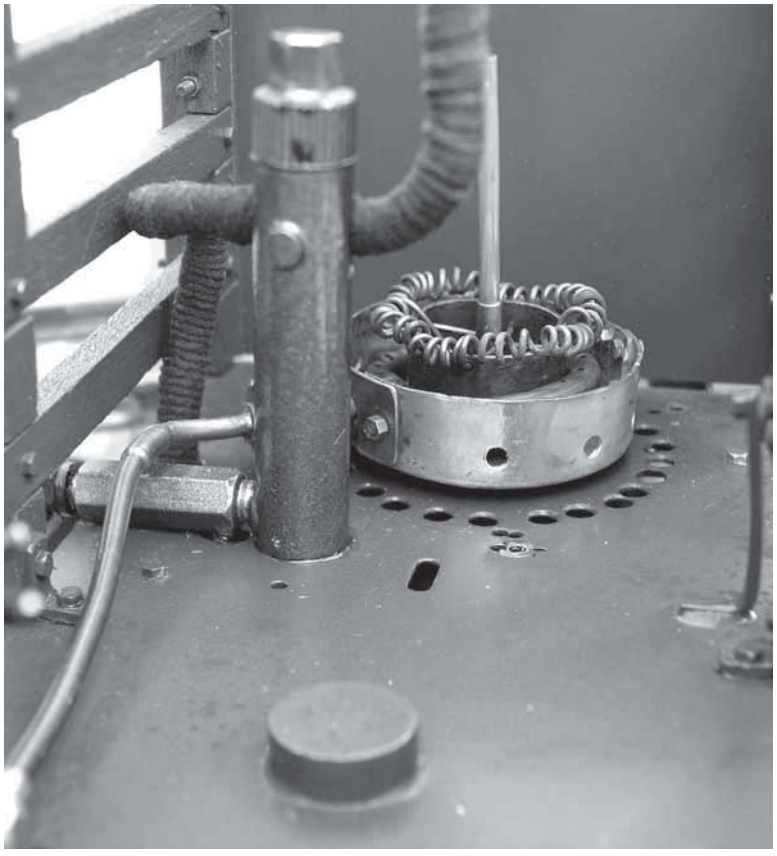
The author's completed rail truck, ready & waiting.



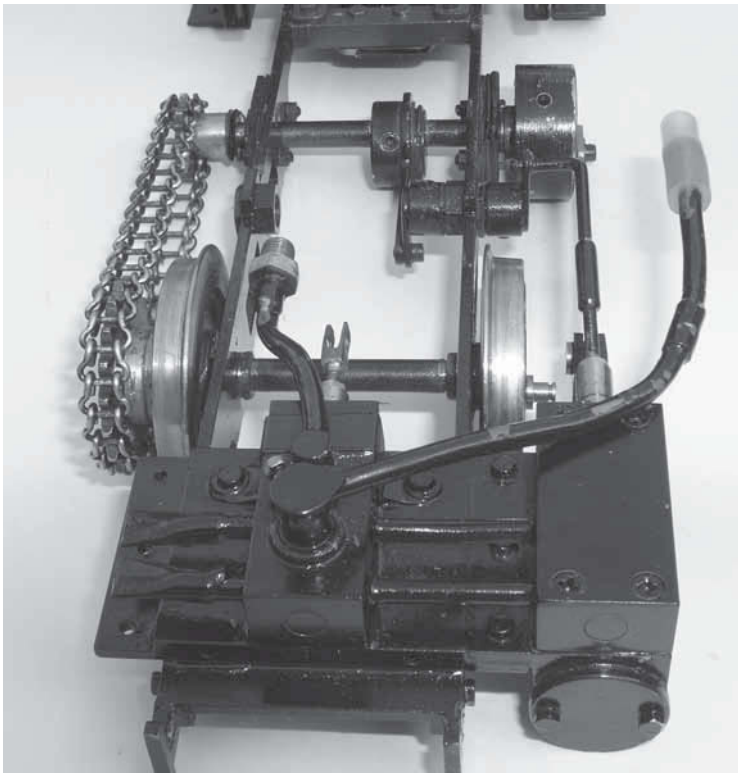
Boiler Bottom.



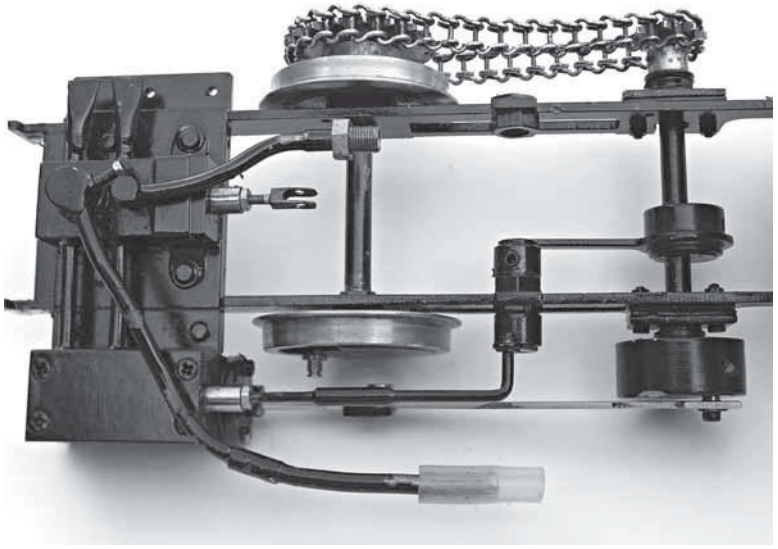
Boiler ready to place on burner.



Burner in place on truck bed.



Rear view of chassis.



Chassis, cylinder and drive mechanism.

spikes" in the bottom for better heat transfer. Since I was using Ruby cylinders, I used the boiler capacity of the Ruby as my size guideline. This was where I messed up! I should have spoken with an experienced builder before I built my boiler. I discovered after I built the boiler, that single flue vertical boilers are much less efficient than the same size horizontal boiler. So when I got the truck ready to test things, the boiler could not keep up with the two Ruby cylinders. After some soul searching (and head banging) I decided to use the boiler and change the truck a little to make it work.

After several discussions with Larry Herget I made these changes:

A. I switched to a single cylinder and gear reduction.

B. I added what Larry called an exterior flue to the boiler. This is basically a boiler wrapper that is spaced out from the boiler to let the burner flame go up the center flue AND around the outside of the boiler.

C. I made the round butane burner slightly larger than it was originally. I also added a stainless radiant coil to the burner.

The first change was the most obvious, since I went from four drivers to two. I used the Ruby frame for the truck but reversed it so that the cylinders were in the rear. I replaced the front axle with a 3/16 inch brass jack-shaft. I turned a small flywheel using the same drive pin spacing as the Ruby driver. This let me keep the main rod as it was. The jack-shaft is mount-

Front view of completed ral truck.

ed in ball bearings from a local Hobby shop. On the side with no cylinder, I mounted an 8 tooth sprocket to the jack-shaft. I drilled and tapped the Ruby driver and bolted an 18 tooth sprocket to it. The sprockets and chain came from Stock Drive Products. I cut the lines to the second cylinder, crimped them and soldered them shut. I am using the original Ruby reverser valve. I am also using one of the original eccentrics and linkage to control the cylinder valve. When I got these changes done and tried everything it worked quite well on the workbench.

I ran the truck some on a small circle of track and everything seemed to work fine, so I painted her and took off for Diamondhead. Anyone who saw me there will likely remember that I could not stop smiling. The truck ran better than I expected, I have a video of it pulling 20 cars. Since Diamondhead I had Stan Cedarleaf make me some gold decals that really gave the truck a finished look. I am still playing with the exhaust but the truck is a real runner and I am planning my next loco!

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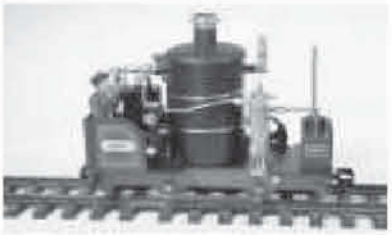
Willi		$785.00	$699.95
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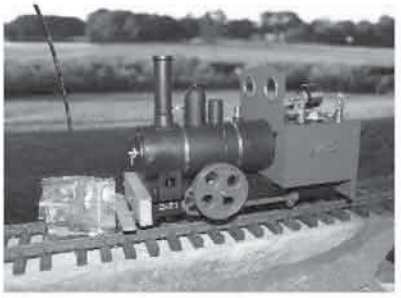
Wilma		$843.50	$759.00
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Steaming in the Sunshine on Florida's East Coast

The Tribe Track Layouts

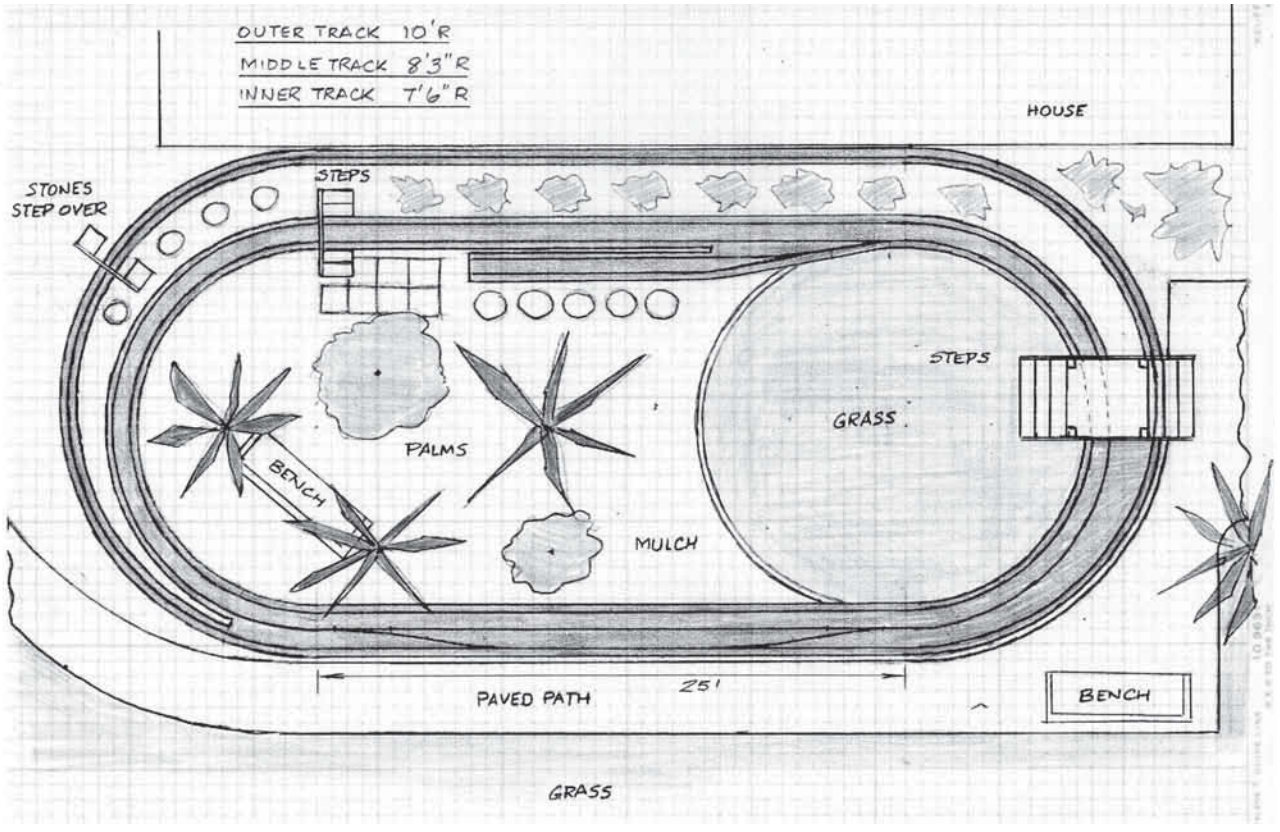
Merritt Island, Florida

article and photos by John Tribe

How it all came about ...

I started running gauge one electric inside the house in the early 90s, mostly with LGB and Bachmann equipment. Living in a salty atmosphere next to the Indian River Lagoon, I didn't think electric rails would hold up well outside and since I wanted the track installed semi-permanently I decided the best solution was to run it around the kitchen above the cabinets. Once I'd gotten a doubtful OK from the kitchen boss I started the necessary shelving between the cabinet tops and negotiating for the top shelf in the pantry and the associated holes each side. After that, as doubts arose about the extent of this work, I found it was easier to seek forgiveness than to ask permission for future acquisitions. Luckily my wife was working a lot of second shift during this time and I could cut holes in walls, frame them out, stain the trim and, very importantly, clean up the mess before she got home.

As the layout grew I decided that it made a lot of sense (to me anyway) to extend it through the kitchen walls into the utility room. This would give me enough room for 3 more sidings, allowing for a total of 7 separate trains to be stored above our heads. My long-suffering wife accepted all the activity and the noise when I was running but put her foot down when I ran smoke generators that had the habit of leaving



The track plan.

a brown trail on the ceiling and a lingering smell in the house.

In 1997 we closed in a screened porch and converted it into a dining room and bar. It was a logical step, again for me at least, to punch through another kitchen wall inside the pantry and run track down through this new area above the bar. Unfortunately I screwed up on window sizes on the opposite wall and while I maximized the viewing area of the river I left insufficient height for a track bed so the track had to stop after a 40 ft. straight run down along the inside wall. I installed a couple of diodes across the track joints at the end of the run to slow a train down and a timed directional change to back the train out on its own with similar controls at its siding in the utility room. All this is still functional and great for entertaining the grandkids. It does tend to get bit dusty because the house duster says "she don't do trains!"

However, around the turn of the century I was bitten by the live steam bug, eventually committing to build an Aster A3 "Flying Scotsman" kit. I built a treadmill for it but this soon paled and I needed some outside track to run freely. Obviously inside was out of the question because of tight radii, fire hazards and oil splatter (plus a wife who said, in no uncertain terms NO WAY!).

So I looked around the garden for an appropriate site until my yard superintendent (who also manages the inside of the house) pointed out where I could put it (literally) and the boundaries I had to work with. I started off with the intent to just have a single loop of track to check out the Aster performance and proceeded to design a substantial support structure for an elevated track of a nominal 32 inch height using 4 X 4 PT posts, 2 X 4 PT cross beams and 2 X 6 PT stringers. I then decided that with that substantial base it would be foolish not to have at least two track loops so I laid out two ovals with 25 ft straights and radii of 7 ft 6 in and 8 ft 3 in. On the inside loop I added two sidings and on the outside loop a passing siding and connected the two loops with switches. I used all Aristocraft track and switches.

Rapidly tiring of scooting under the tracks on my knees every time I needed to get to the inside of the layout, I built crude walkover steps at one end to reach the inside of the oval and then a more substantial set of steps at the other end for the less limber of our central Florida steamers.

Last year, continuing my tradition of building only British kits, I built an Aster 9F "Evening Star" 2-10-0 and, because its initial performance seemed lacking on the curves, I assumed the configuration demanded more radius. (I subsequently tweaked the 9F and it worked fine on the smaller radii). However I pressed on to add a 10 ft radius loop using the passing siding on the existing outer loop and just squeezing past the house wall with inches to spare with a new loop outside the other two. It was tight but it worked. I took out the switches connecting the two inside loops and used them and two more to connect the two outer loops.

All of this work required some rework of faucets, sprinkler systems, landscaping etc. – all under the eagle eye of the boss lady – but it worked out well and steamups have been successful. As I said earlier we live on the Indian River so views from the railroad make for a pretty layout with only the minimum of landscaping.

Like all garden railways it's never finished and I see now that I should have thought bigger when I started and had more steamup sidings, maybe better access and more durable top boards. I used PT 1 X 6's but the Florida weather is tough on them and I will probably have to change them out before long. Next time I will use Trex composite boards and camber them a little on the curves. (The trains haven't come off on the curves but the flat track makes one worry a little if they are hustling, as Asters are wont to do!).

Also although the Aristocraft track is holding up pretty well, their switches have not worked as well. The frog gaps are too large for the Asters and the clunk of the wheels dropping into the gaps offends me even though the wheels don't derail. Also all the switch boxes have deteriorated, their stainless springs rusting and the action seizing, and while Aristocraft have replaced parts I have found it better to switch to simple throws from Sunset Valley. In fact I would go to SV for all my track needs if I were starting over.

The layout was fun to design and build and very rewarding to see my locos strutting their stuff. As with all these projects you learn a lot and next time it'll be an improved version...assuming I can again get spousal planning permission.

(Our thanks to Jim Pitts at Southern Steam Trains for suggesting this article to us.We appreciate his generous support of the hobby and SitG - ed.)

Track view looking east.

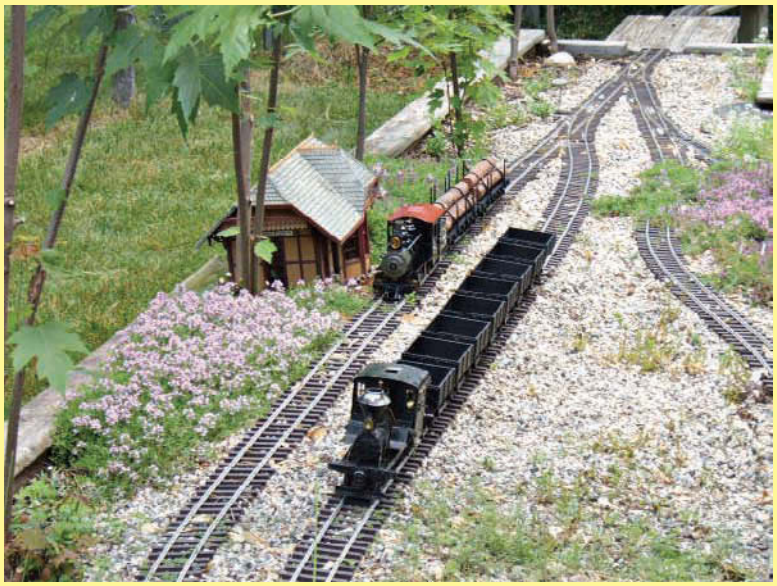
John Tribe runs his Aster Bulleid with a rake of J & M Pullmans.

Mike Albert fires up his Accucraft Royal Hudson.

John Riley gets his stable of small locos and his railcar ready to run.

Norm Saley 'tweaks' his Accucraft K-27.

STEAM SCENE



Scenes from a recent steamup at Robb Debries' track in Michigan. Robb's track is nicely scenicked, and features elevations ranging from ground level to waist level.

photos by Bill Hendrick

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Building & Operating Aster Locomotives (Part 1)

by David Stick
photos by author

AN INTRODUCTION

Ownership of a live steam locomotive in any gauge or scale truly transforms ones model railway hobby. I don't think there is anything to beat sitting in a deck chair with a cold beverage in one hand watching a train with a well selected consist working its way around a garden railway on a sunny afternoon. The sight, sound and smell takes one back to the glory days of our youth when we sat on embankments across the country, bottle of Tizer and a Mars bar by our side, watching our favourite locomotives parade by. Sure, we can still get the occasional thrill from a rail tour on the main line or on one of the preserved lines but somehow it's not quite the same. Many of us have found there is a way of getting that feeling back and owning a model railway can often do it. Even better though if it is a live steam railway!

Many modellers regard the construction and operation of live steam locomotives as something that

The Author's Bulleid Pacific Wadebridge cracking on with the ACE – next stop Padstow – on Chris Arundell's Little Eden Railway in deepest Cornwall.

is beyond their ability. These armchair enthusiasts are frequently to be seen watching gauge one locomotives at a running track or at an exhibition with a longing look on their faces. When approached and asked 'why don't you join us and build one' they respond with 'I could never do it because I'm not an engineer'. This is usually just an excuse because of a lack of confidence and here I'm hoping I'm going to be able to convince you that there is no mystery and that you can do it.

There is no requirement to be a professional engineer nor even for any training or engineering qualification. Naturally, some knowledge is an advantage. There are many people who both scratch build and operate steam locos very successfully with nothing more than rudimentary knowledge. They have usually done some reading in advance of starting out and then asked questions and entering into discussion with those who have the experience. Joining the Gauge 1 Model Railway Association should be your starting point for standard gauge and there are several alternatives for the narrow gauge folks.

Ready Machined Kit

Of course, many don't have the machine tool facilities to be able to make the parts necessary. A lathe is pretty well essential and a good one is not cheap to purchase and requires some practice and study to get the best results. However, these skills can be learned by the tyro fairly quickly and with great satisfaction as has been proved many, many times.

Another method available to the keen enthusiast with few facilities is through building a ready-machined kit of parts. A fine example of a kit manufacturer is the Aster Company who produces the ultimate in locomotive kits. Not cheap but an amazing product that makes up to a truly magnificent and very satisfying model. There is usually a whole range of models available, all in standard gauge and at a range of prices. The cheapest, such as the antique Liverpool & Manchester Railway 'Lion' or the LNWR 'Precedent' (Jumbo) are both very good value and beautiful little models providing ideal starter kits.

Even building a kit is thought by some to be too difficult to risk the investment involved. Well, I'm here to tell you that this is simply not true and I hope to show you why in this article. I would like to show how easy it is, providing a few simple rules are applied. All who invest in these beautiful kits will gain knowledge about steam locomotives and end up with a magnificent model. To illustrate the method used I have included a number of photos taken during construction of several different locos showing some of the design features and the various stages in construction.

The Company

The Aster Hobby Company began building model steam locomotives in 1975 as a result of a need for diversification. Since the mid 1950s they had been in the business of manufacturing mechanical cash registers. Advances in technology in the early 1970s resulted in a change to electronic registers, making their mechanical engineering design and precision manufacturing facilities redundant.

The company decided to preserve their investment in mechanical engineering and made the bold move into the hobby industry. The first locomotives chosen in 1974 were the Southern Railway 'Schools' Class 4-4-0 and the Japanese National Railway Class 8550 2-6-0 manufactured by ALCO in the USA. These first two locos were produced in production run sizes of 3000 and 2500, numbers, never again repeated except for the 'Frank S' locomotive produced as an engine for use with LGB systems. Since the 1990s the production runs have rarely exceeded 500 and around 300 is most common.

The development of their designs has been evolutionary rather than revolutionary, much the same as the full size variety. Good sound principles developed by the model engineering hobbies were adopted and have been the bedrock of Aster loco design ever since.

The early boilers were either Smithies or Pot-boilers and it wasn't until 1978 when a locomotive type boiler was introduced with the JNR Type 62 loco followed in 1979 by the 'B' type boiler for the 141R. Centre flue boilers for gas firing arrived in the early 1980s and the C Type boiler for the LNER A4 followed in 1984. This hugely successful boiler, a prodigious steam raiser, has been the most commonly used since that time. It combines ease of manufacture with a robustness that has resulted in very few failures and then only due to serious mishandling.

Superheater Temperatures

The design of the cylinders has followed the same pattern from the beginning, the only significant difference being the change from sealing the pistons by the use of fibre packing to the use of Rulon rings. These are believed to be a form of PTFE and have proved

to be a great success with extremely low wear rates. I have had a set in my GWR King for fifteen years and it has been run very frequently!

One area of conservatism persists in that Aster continue to use slide valves rather than piston valves. ***(This is no longer true since the 9F has very successful piston valves.)*** Since superheater temperatures are relatively low and oil systems are of the displacement type, this seems appropriate. Remembering with tongue in cheek that old adage 'slide vales wear in whilst piston valves wear out'! As far as I'm aware the only changes in the cylinder area have been those associated with retaining the appearance of correct valve gear where the prototype has inside admission piston valves. It has been necessary to insert a plate beneath the port face to reverse the flow of steam to the ports in some models.

The valve gear closely follows that of the prototype and is as near scale as is practical. Bronze bushes are usually provided in bearings, though the A3 and Bulleid 'Pacific' or Spam Can, for example, have what appear to be Rulon/PTFE bearings in parts of their valve gear and connecting rod bearings.

Almost all of the chassis designs use plate frames with either bolted or, in some cases, welded stretchers. All are fitted with springing either by coil springs or leaf springs with sliding axle-boxes. A few use a prototypical suspension with compensation by levers as used on the full size loco. The most complicated example of this that I have come across is that fitted to the latest version of the JNR C62.

Highly Detailed

When it comes to systems and fittings, model engineering experience has been used to good effect and in some cases improved upon. A good example of this is in the currently used axle pumps now fitted to almost all locos. The repositioning of the clack boxes has made maintenance easier and no longer requires dismantling of the pump to gain access.

Backhead fittings have largely used the same design for many years and include a needle type regulator, a needle type blower valve, usually a water level glass and a backhead clack fed by the axle pump and/or water tank mounted hand pump. The footplate on the 'Duchess' now has a needle vale controlled oil supply from an oil reservoir mounted underneath feeding the cylinders via a long gallery pipe under the boiler. Like the earlier oil feed systems, normally positioned at the front end and not controlled, it is of the displacement type. The needle valve is used to pressurise the oil reservoir before starting to prime the long gallery with oil. The valve is then closed after which the system runs as a normal displacement oiler.

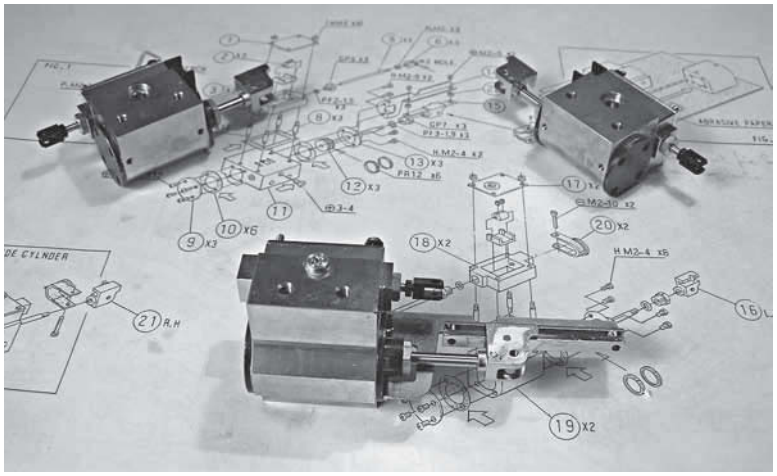
The fuel system for spirit (meths) is straight forward with the usual chicken feed type feeding a three tube wicked burner, nowadays provided with ceramic yarn wick material instead of asbestos. Gas burners were of the poker type for many years but the new JNR C62 has a ceramic grate type burner as well as an exchangeable grate for coal firing. In this model the tender is fitted with a 'U' shaped gas tank which itself is fitted with a steam heater not unlike the shape of the superheater. This should ensure that the locomotive can be run in even sub zero temperatures.

The level of detail added to locos has steadily increased over the years and the use of lost wax technology has resulted in superb highly detailed and scale dummy fittings. If there is a downside to these it is in their fitting to the boiler case and footplate. This is often achieved by bending tags to hold the part in place. These are often difficult to access and not easy to bend and a loose fitting can result. If this is the case the problem may be resolved by applying (where it can't be seen) a little epoxy resin.

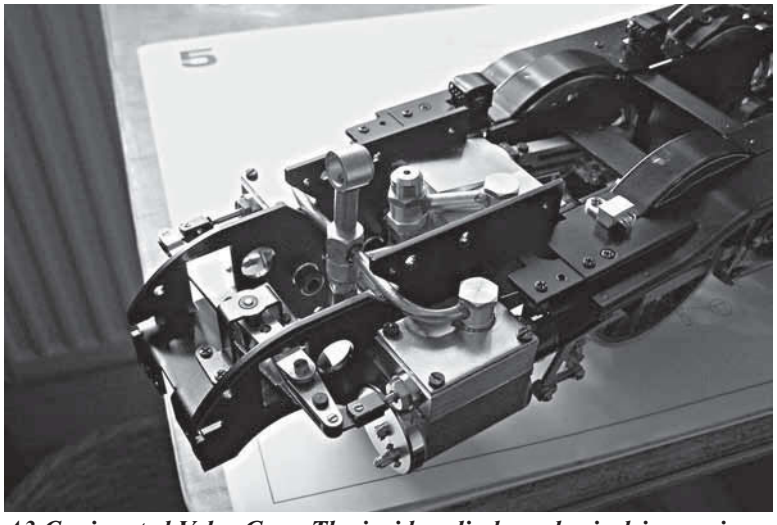
More in part 2...

Our thanks to Jim Pitts of Southern Steam Trains for his generosity in sharing this article with SitG readers. Please visit www.southernsteamtrains.com for more excellent articles and photos of Aster locomotives. We and the author also wish to thank **Garden Rail** ***magazine, where this material originally appeared in 2007 - ed.***

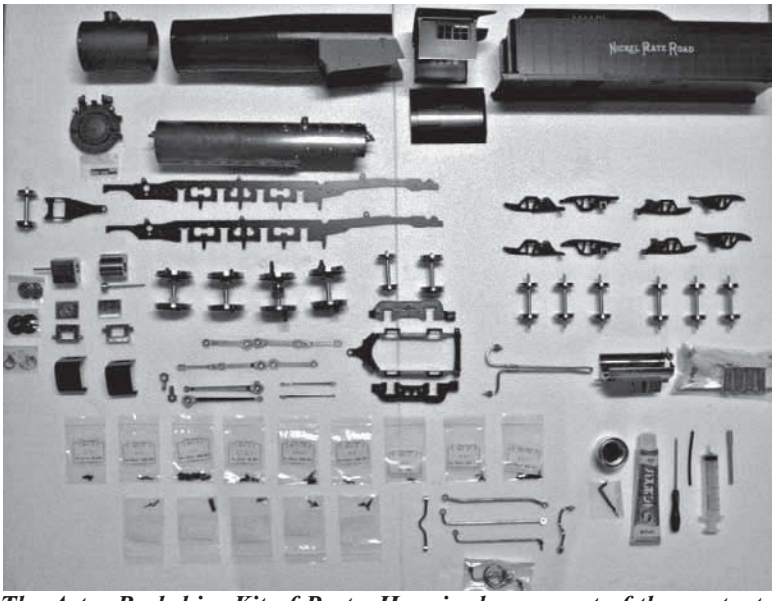
The Aster A3 Kit. All kits come boxed in extremely tough containers. In these are smaller boxes in which are housed all parts wrapped and sealed. Also included are the instruction manual and book of isometric drawings, sealant, tools, etc.



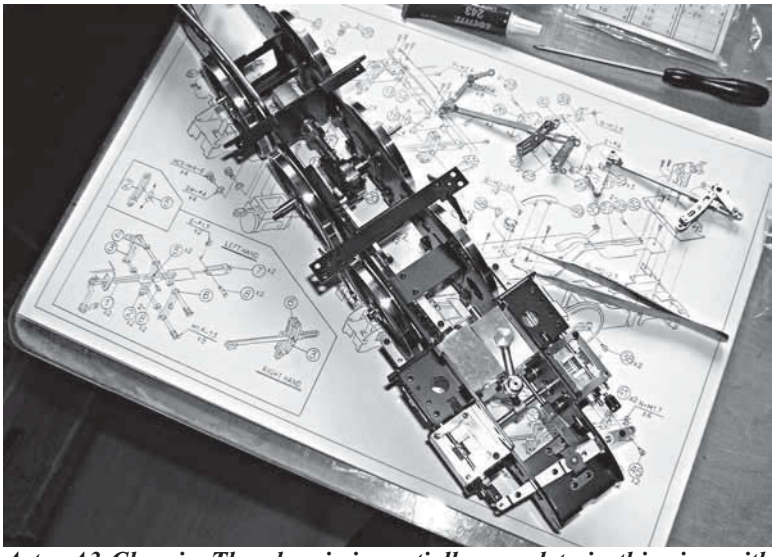
Aster Bulleid Pacific Cylinders. As can be seen in this view the cylinder castings are machined to a very high standard and assemble perfectly. The appropriate drawing can be seen beneath them.



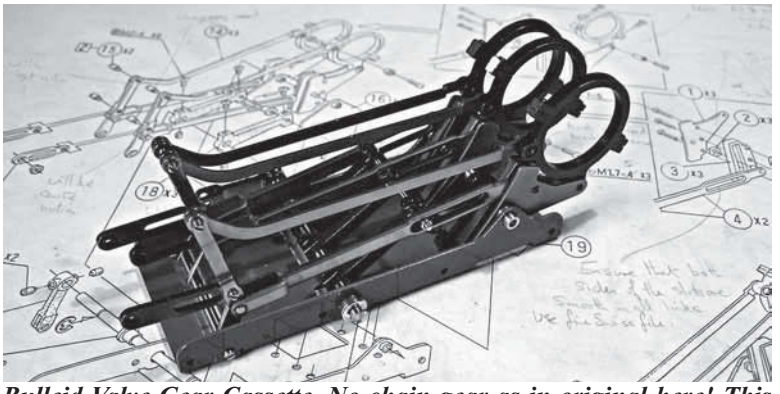
A3 Conjugated Valve Gear. The inside cylinder valve is driven using a derived motion provided by inputs from both outside gear exactly as in the full size loco.



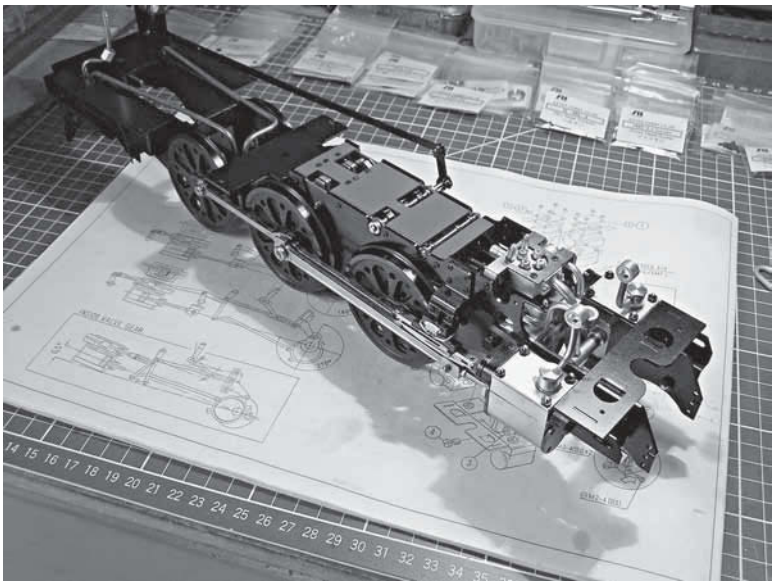
The Aster Berkshire Kit of Parts. Here is shown most of the contents of the very large Berkshire kit. This has been unpacked to display the extensive number of parts but this is not recommended for fear of losing parts. Only those parts to be built should be removed at any time during the build process.



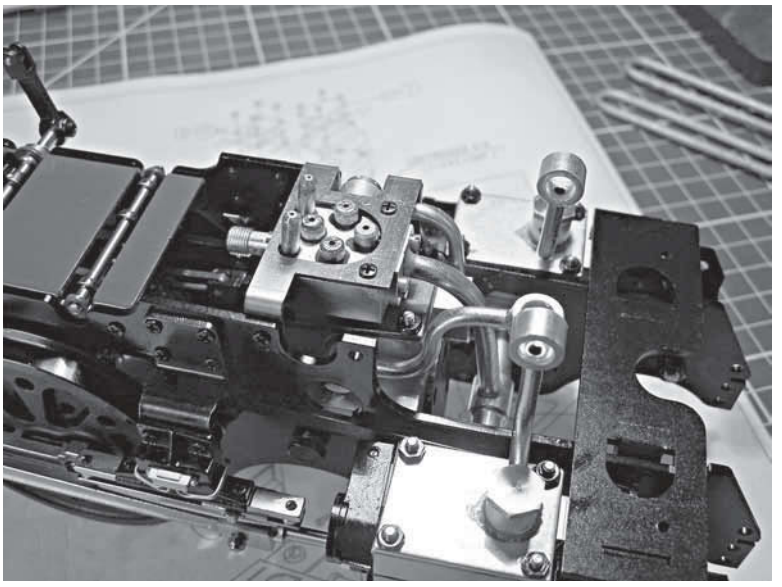
Aster A3 Chassis. The chassis is partially complete in this view with the three cylinders fitted together with the axle pump, the eccentric for which is shown on the driving axle with the pump behind it fitted through the frame stretcher. Note the slide valves in the steam chests of the outside cylinders and above the chassis on the drawing, the inside valve gear motion nearly ready for assembly into the chassis.



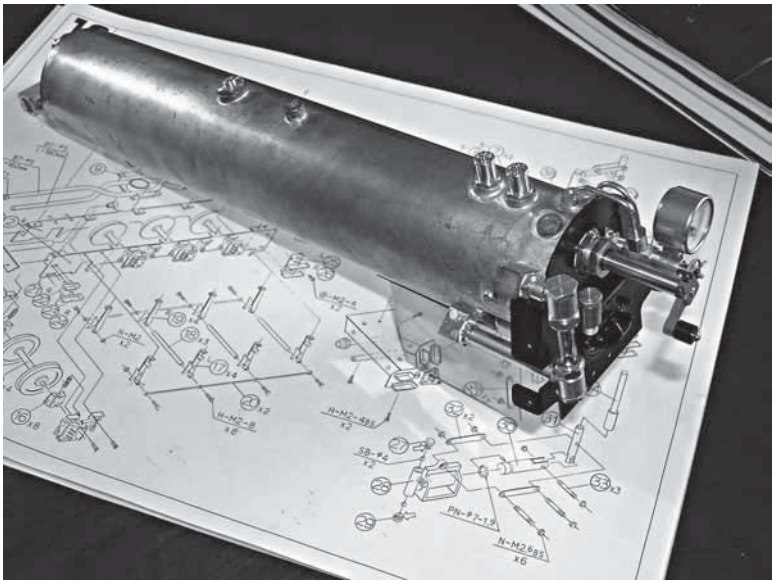
Bulleid Valve Gear Cassette. No chain gear as in original here! This beautifully designed version of the Walschaerts' gear is built as a sub assembly from parts largely laser cut and requiring very little work to complete. The assembly is built upside down and is shown as such in this view.



Bulleid Pacific Chassis. The valve gear has been installed in this view together with the cylinders and multi blast nozzle. The latter is a miniature version of the full size Lemaitre device fitted to the full size loco.



Bullied Pacific Front end. This close-up shows the Lemaitre blast nozzles and behind them the blower nozzles. The vertical mounting of this assembly is imperative to ensure good steaming. The blast from all of the exhaust nozzles must fill the chimney venturi to create the necessary vacuum in the smoke box to draw the fire. The little stainless steel frame seen is there to ensure this happens.



The C Type boiler. This view shows the C type boiler as used in the A3. The backhead includes a water gauge glass, regulator, blower (just below the pressure gauge) and backhead clack valve. Just in front of these is shown the black dummy backhead and on the top of the boiler the two safety valves.

A Tale of Two Servos

by Peter Thornton

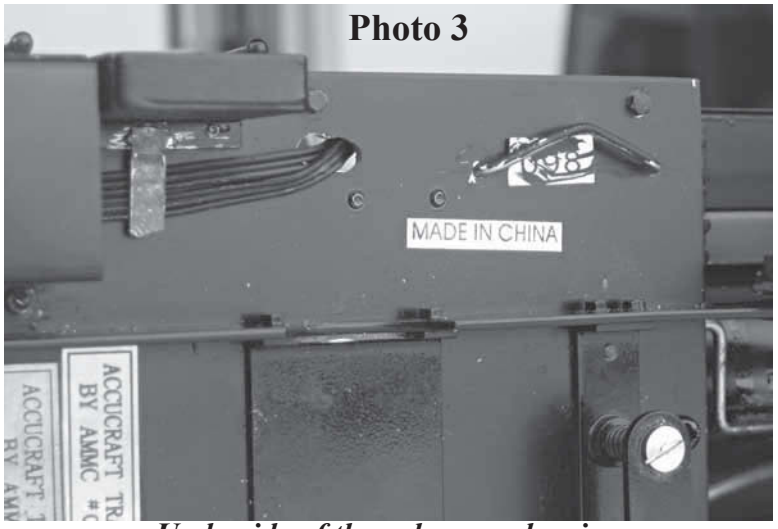
I have an Accucraft "Fort Wilderness Railroad" locomotive ("FWRR"), a limited-run version of the ubiquitous 'Ruby', done for the Carolwood Pacific Historical Society, whose members are fans of the Disney railroads. (I am a fan – Walt Disney decided he wanted real steam engines at his parks, not fakes. Walt's own garden railroad, the Carolwood Pacific, is documented in Mike Broggi's book ***Walt Disney's Railroad Story***, which I highly recommend. See www.carolwood.com for more details.)

Like all 'Ruby' locos, it arrived with the usual very noisy burner which went out at the slightest provocation, so my first projects were to wrap the burner poker with s/s mesh and to open up the chimney so the engine could 'breathe' when it was coughing up globules of oil. The basic steps for tuning the 'Ruby' are well documented so I won't go into detail, except where this engine is different from the norm.

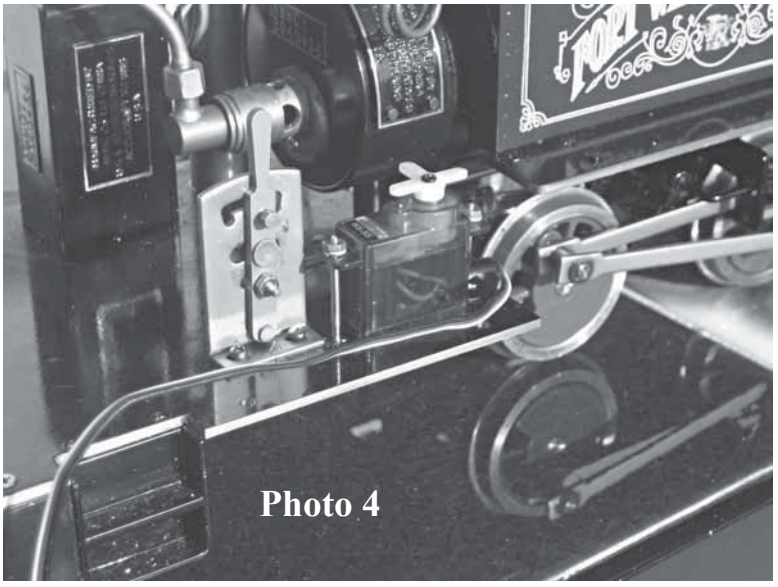
It has been found that opening up the bottom of the smoke box facilitates breathing and reduces the tendency for the burner to go out randomly. This version has a solid saddle, so it can't easily be opened, but an online discussion about chimney diameters set me thinking, and I replaced the standard 3/8" internal diameter stack with a 5/8" ID one from Trackside Details that was in my parts box. It works like a charm – the big oily stuff it spits out was blocking the airflow until it collapsed into the smoke box and was burned with a puff of blue smoke but no longer! **Photo 1** shows it with this stack, and with the r/c antenna trailing in the slipstream.

This article is about the fun I had installing radio control (r/c) with a chain drive throttle, using one of the new Spektrum 2.4 GHz digital radios. For those

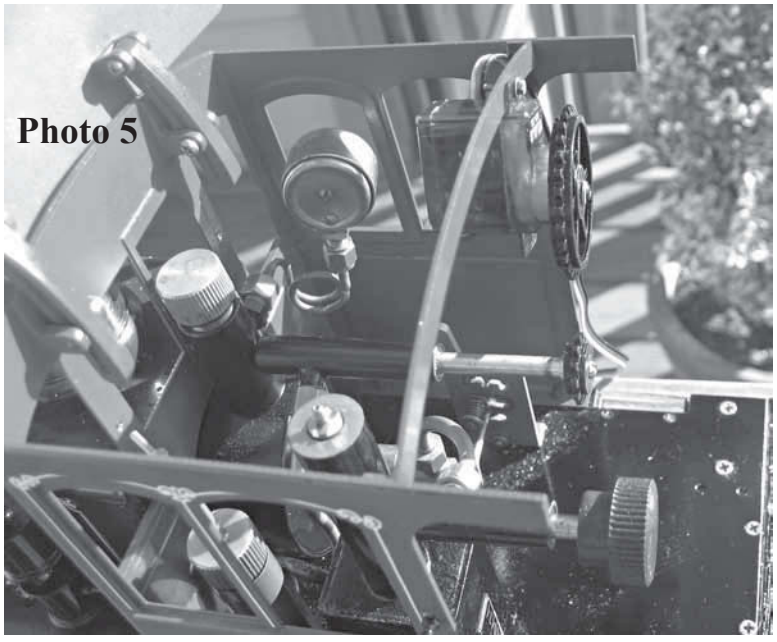
Author's FWRR "Ruby" at speed on Roger Cutter's RGS East layout (on the old steam loop that no longer exists.)



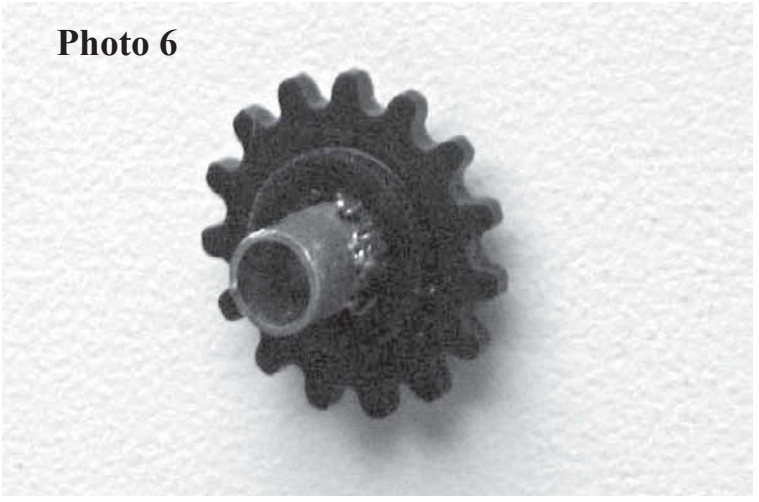
Underside of the cab area, showing the cables routed to the tank and the clip.



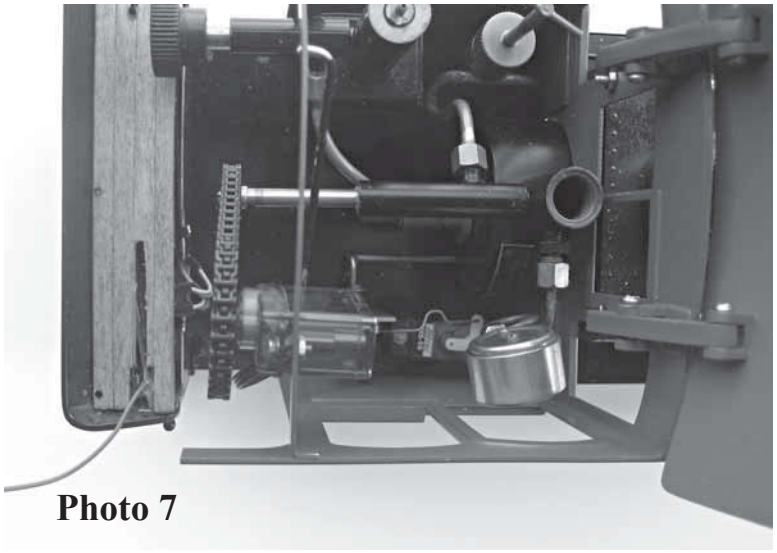
Reversing Lever and servo mounted in the cab. Wires still to be routed under the floor.



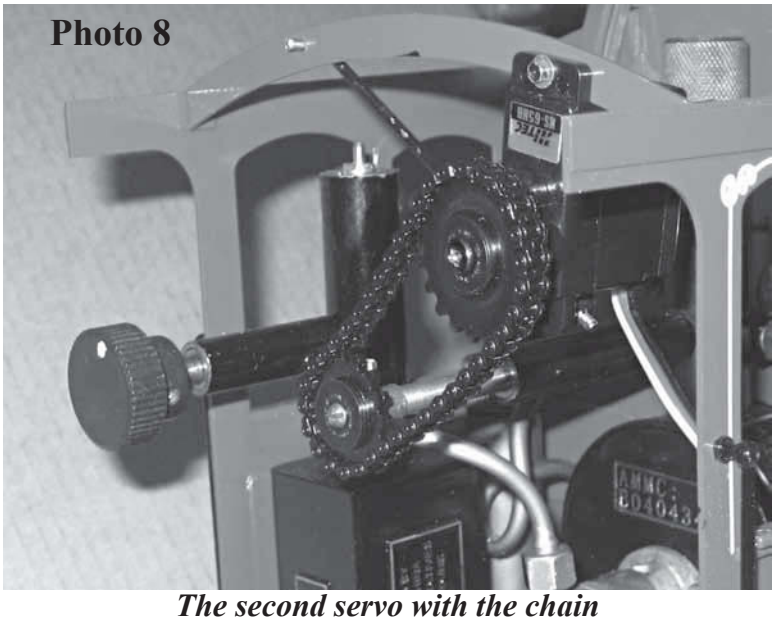
Side View of the first throttle servo bolted to the cab rail, showing the pair of sprockets.



Small sprocket press-fitted onto the brass tube, with wire 'splines'.

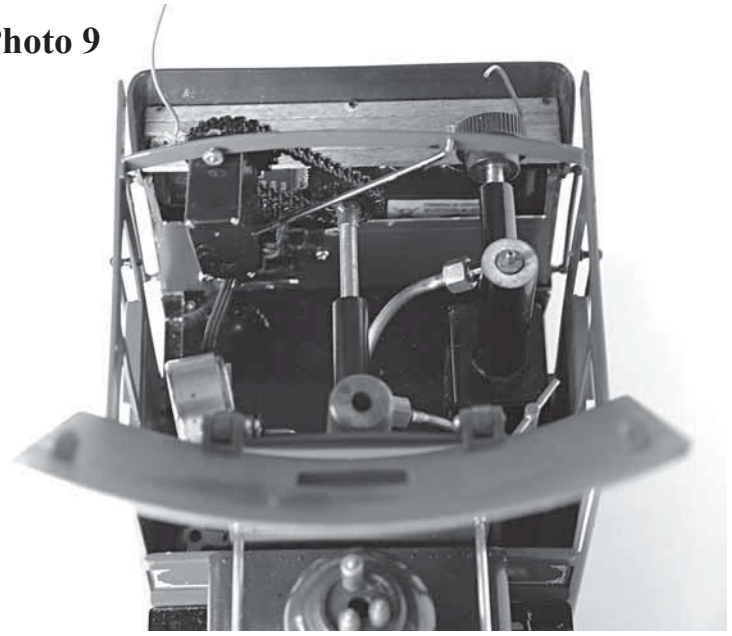


Top view of the cab, showing the servos, chain and wire on the reversing lever.



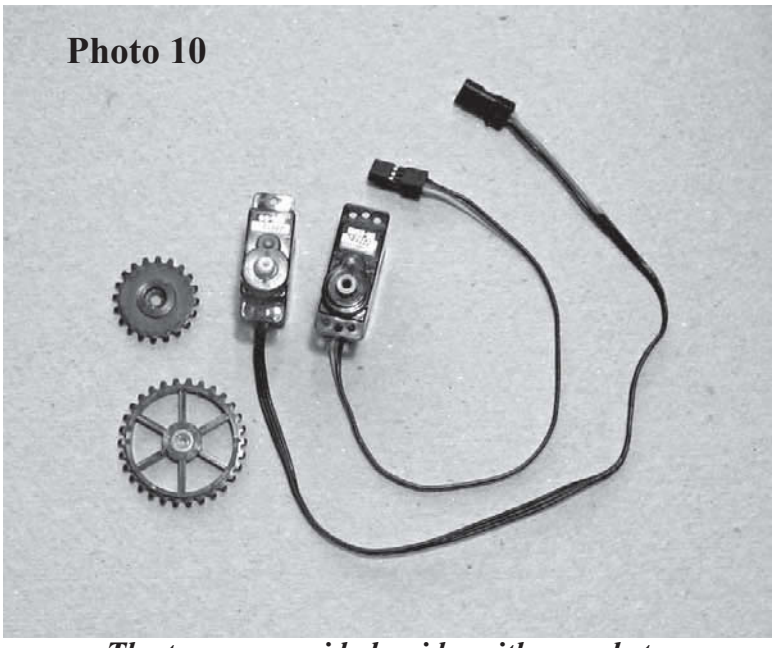
The second servo with the chain and the two new sprockets.

Photo 9



A view from the front of the cab, showing the servo retaining bar and the bolt in the throttle rod.

Photo 10



The two servos side by side, with sprockets.

who aren't aware of this technology, it is similar to wi-fi in that it uses the 2.4 GHz band, way above the usual 'glitching' frequencies, and it uses digital messages that are encoded with the address of the receiver and transmitter. In fact, the first thing you do after turning this system on is the 'bind' the transmitter to the receiver so that only that rcvr will respond to the commands. (The transmitter will 'bind' to many different rcvrs – you select which one from the transmitter display. See www.spektrumrc.com for more details.)

The Spektrum system works with all the usual servos and r/c accessories. I have the Dx6i, which consisted of the DX6i transmitter, which handles up to 10 models (different locos with receivers) plus an AR6100 receiver which was the smallest at the time. I managed to squeeze the electronics into the tank behind the cab of this small loco.

[It's perhaps worth noting that the FWRR locos were quite small, but Carolwood modeled them at about 1:17th scale to make them compatible with our gauge one, as the originals ran on 30" gauge track. Consequently there is a lot of room in the cab compared with a standard Ruby.]

My second version of this part of the installation involved a decent rechargeable battery pack and a charging jack. I had installed conventional batteries initially, thinking it would be easy to change them – but it wasn't. This rechargeable pack is the same as the batteries in the transmitter – 4 AA cells with 4.8V – and can be charged with the transmitter's charger. (Spektrum supplies 4 NiMH AA batteries with the system.)

You can tell that I had to cut away some of the brass tank, a strange feeling when you know that unmodified versions of this loco have changed hands at more than double the retail price! It removes with 4 small bolts under the floor, which was also modified by having holes cut for the servo cables: see **Photo 3.** The clip holding the throttle and reversing servo cables was soldered to the floor with a hot iron in one quick maneuver. The bent rod on the top right is holding the reversing servo in place; I had just received some taps and dies so I thought I'd practice putting threads on a rod, and it made a neat installation – except for the underside which was a bit too long for the holes. Having already put threads on the ends before bending it, I wasn't inclined to start again, so the bend is an 'adjustable fit'.

The servos I used for the first version of this project were a pair of sub-mini Hitec HS-55. I had one in my kit, and I used the same type in my C-16 2-8-0. I bought the parts from Servocity (www.servocity.com). I ordered

1 (HS124) 12T Hitec Sprocket $3.67
1 (HS304) 30T Hitec Sprocket $5.00
1 (C1227) 12" Precision Chain $5.95

The reversing servo (Hitec-55) is bolted to the floor with this U-shaped rod, as you can see in **Photo 4** (taken before the wires were routed under the floor.)

The center servo arm is aligned with the Johnson Bar. The small bolt at the top of the lever that fits in the indent on the bracket was backed out, and a small piece of piano wire was used to connect the top bolt to the servo arm. The wire had a small 'U' bent in

it to allow for differences in the throw of the servo versus the Johnson Bar. (The wire can be seen below the throttle servo on **Photo 7**.) This operates very satisfactorily, as I expected it would as it is virtually the same as my C-16.

Throttle Servo 1

The fun started with the throttle servo. As you are possibly aware, r/c servos have a limited range of motion: about 45 degrees either way for a total of 90 degrees. Our throttles can be turned a full rev or two – in fact, on these locos, you can unscrew the throttle rod completely and take it out. A year or so ago 1/8" chain drive became available, and turning the throttle via a chain seemed to offer some advantages, such as selectable ratios by choosing different numbers of teeth for each sprocket. I went a little crazy and started with a 12 tooth for the throttle rod and a 30 tooth for the servo, a ratio of 2.5:1, so a 90 degree turn of the servo would produce 90*2.5 = 225 degrees at the throttle. Surely a good thing!

Before we get to that, let me mention that the sprockets aren't an exact fit on the shafts. The smaller pinion had to be fitted to a brass tube that was a sliding fit on the throttle shaft. The inside of the pinion is splined, designed to fit a servo (not mine – it didn't fit the Hitec 55.) I soldered some flattened loops of thin copper wire onto the tube to make the pinion a press fit as you can see in **Photo 6**. The throttle shaft was drilled and tapped (more practice) and a corresponding bolt and washer held the pinion in place. Then, as the throttle shaft can be unscrewed, I took it out and drilled at a right angle through it and the tube, installing a small bolt to keep them together. You can see this in several of the photos. The other sprocket fit on the servo without modification. An advantage of chain drive is that it is very forgiving – slight eccentricity is not a problem.

The top bracket on the throttle servo was bolted to the rear cab frame after I drilled a hole for it (**Photo 7**.) The bottom of the servo was mounted on a rod that was adjustable. The rod went through a second hole in the cab rear frame (see **Photo 8**) and into a brass tube with a bolt to clamp it in place. The brass tube has a nut soldered inside and is bolted through the bracket on the servo. (There's a proper name for these – my old Raleigh bike had them for adjusting and fastening the brake cable to the brake arms.) The bolt clamping the rod allows you to alter the tension and to loosen the whole thing to add or remove the chain. The chain itself is a clever set of u-shaped nylon links that interlock. You pry one open and the chain falls apart. It doesn't seem to do that in normal operation, which is a good thing.

So I routed all the wires to the receiver, plugged in the battery, and tested the system – not bad on the bench, but not good on the track. The reversing servo was fine, but the throttle servo didn't do a thing and didn't seem to be able to turn the throttle shaft when it was warmed up. The latter isn't exactly a smoothly-operating device, as it is designed to shut tightly and not leak steam, so it does take a bit of effort to turn it. We hardly notice when there's a big knob on the end, but my poor servo had a problem. The real issue, of course, was the turning torque exerted by the servo. The Hitec-55 only provides 18 oz-in and my sprocket ratio of 2.5:1 meant the torque was reduced by the equivalent ratio to a mere 7.2 oz-in.

Throttle Servo 2

While doing this testing, I confirmed that, like my C-16, the throttle didn't need turning more than about 90 degrees to get enough steam to the cylinders. So my idea of trying for 225 degrees of motion using this pair of sprockets was probably a waste of time. So back to the computer and another order to Servocity; this time

1 (HS154) 15T Hitec Sprocket $3.80
1 (HS204) 20T Hitec Sprocket $4.13
1 (33065S00) HS-65HB Servo $24.99

The 15 tooth being pulled by the 20 tooth is only a 1.33:1 advantage (or disadvantage in this case.) The 90 degrees at the servo gets increased to 120 degrees, but, more importantly, the torque only gets reduced by 1/3rd. The Hitec 65HB is a slightly larger servo, but it puts out 31 oz-in of torque, so I now had over 20 oz-in working on the throttle – about 3 times the first servo's pull, plus the larger 15T sprocket gave it more leverage.

Photos 8 and 9 show the second servo installation. I had to refit the throttle tube to this sprocket, and (of course) the Hitec 65HB didn't have the same servo arm mounting shaft size as the 55, so I had to devise a sleeve to make the 20 tooth sprocket fit. **Photo 9** shows the arm that holds the servo in place and the bolt that holds the throttle pinion on the shaft.

Operation this time was much improved, and the locomotive turned out to be easily controlled. I fitted a wooden cover on the tank over the electronics, which I would have covered with coal but this engine was an oil burner.

I'm quite impressed with the Spektrum system,

although mine seems to take an eternity to link receiver to transmitter when you turn them on; much slower than my wireless router or my Bluetooth headset! I haven't played with the other 4 sub-channels that are available, though I have seen a locomotive equipped with control of the blower, whistle and cylinder cocks, as well as throttle and reversing lever. If only my little engine had such niceties.

The Nuts and Bolts of Shays
Plan 1553 Engine 2-6”x10” Part 2
by Dan Rowe

I am writing this on vacation from an unusual location. I am on board the SS Badger which is a coal-fired steam car ferry originally built for the Chesapeake and Ohio Railway to transport rail cars across Lake Michigan. The ships engines are Skinner uniflow steam engines. Both engines are steeple compounded, each with four high pressure and low pressure cylinders. The piston rods each have a high pressure piston on the top and a low pressure cylinder on the bottom. With four piston rods per engine this arrangement makes a very tidy compact main engine.

Several years ago I had a professional courtesy tour of the engine room. As I rounded the corner, I spotted a Westinghouse cross compound air compressor mounted on the bulkhead. I pointed and started chuckling. I had never seen a railroad air compressor used for a marine application. The engineer showing me around said that most engineers had to ask what it was, and when the ship was built C&O was not about to use some fancy marine air compressor when they had lots of perfectly good ones in the warehouse.

The last issue about the Shay steam engine had at least one missing dimension on the cylinder frame. The distance from the cylinder centerline to the center of the tumbling shaft is 6-3/4”. I noticed this when I was entering information into the Dockstader valve gear program.

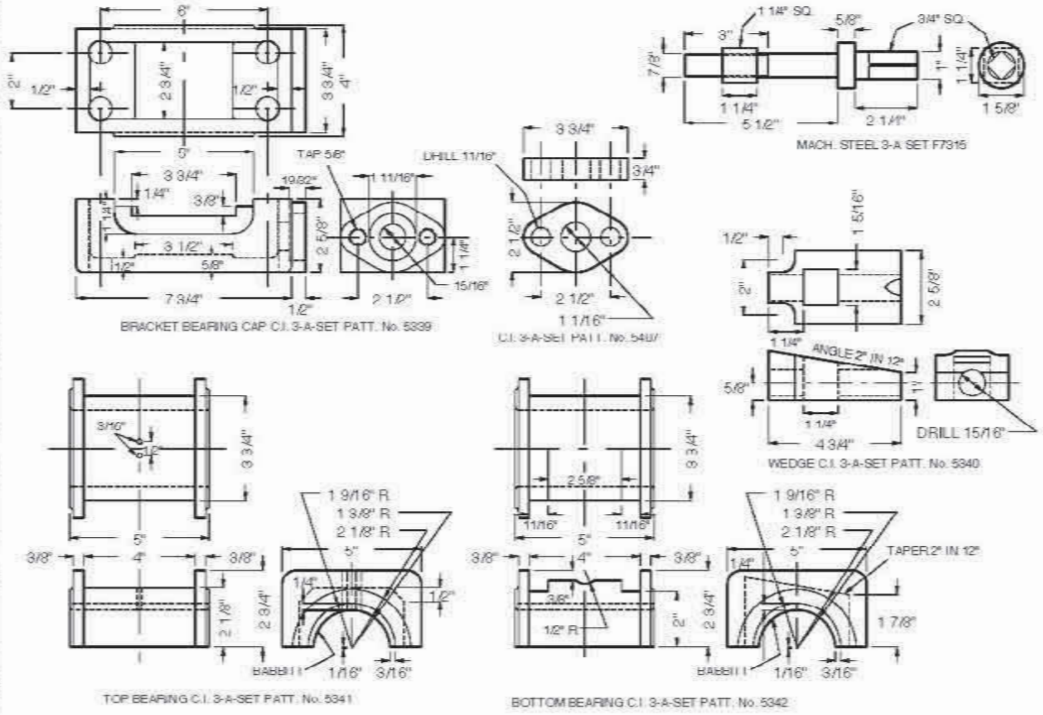
The drawings in this issue are almost all the rest of the smaller parts needed to build the steam engine. They are drawn at twice the build scale or 1-3/4” to the foot. The only missing parts are the lubricating devices and the valve rod gland. I will cover these in the next installment.

There are two versions of the valve rod crosshead. I had a real puzzle with the drawings. There is a drafting error on the crosshead drawing card 8000 No. 2. The total height of the crosshead is printed the same on both LLW versions of the drawing, or 4 1⁄4”. The original drawing on card 8000 shows the dimension from the near face of the guide to the base of the link block pin as 1 1⁄2”. A scale ruler reads 7/8” for the same dimension. I chose to draw the actual part shown by the drawing, and I corrected the printed dimensions to match what the draftsman had drawn. Card 8000 No. 2 was superseded by card 942A5041 on February 15, 1921 and the same dimensional mistake was traced onto the new card. The original drawing shows the same dimensions as card 942A5041. Later the same year on November 22 the mistake was corrected on card 942A5067. Only the last four engines of this class were built after the drawings were corrected.

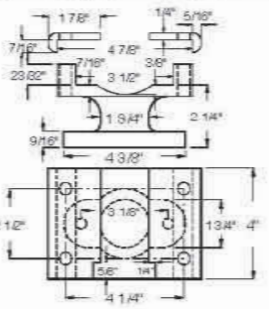
Normally this type of error can be spotted and can be corrected when the engine is assembled in cyberspace. In this case the tumbling shaft also has 2 variations to accommodate either valve rod crosshead. On final check of the LLW drawing notes only 3 early Shays built to plan 1553 used the short version of the valve guide. I had to make a choice and it looks like I guessed wrong. To use the longer valve rod crosshead the arms of the tumbling shaft should be 31 1⁄2” center to center and 30 1/4” for the short version. This will increase the length of the of the tumbling shaft to 36 3⁄4” from 35 1⁄2” the dimension for the short valve rod crosshead I used. The other parts affected by the different dimension on the valve rod crosshead are the die blocks and radius links which connect to eccentric rods. The eccentric rods were forged in the shop to suit the engine. The practice was to make the forward rod nearly straight and the reverse eccentric rod bent for the eccentric side shift.

The only other major variation of this engine in production was that the piston cores were eliminated in the final few built. This was accomplished by dishing the top of the piston downward. The cylinder cover had a protuberance added to take up the clearance volume. The drawings indicate that this change was made to all the Shay cylinders in production at the time.

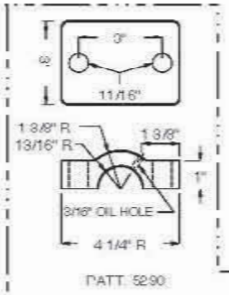
Now after vacation I have to get busy in the shop to finish the test model engine that will be used on the Sykes locomotive.



8704 CRANKSHAFT BEARING DETAILS 2-6"x10"



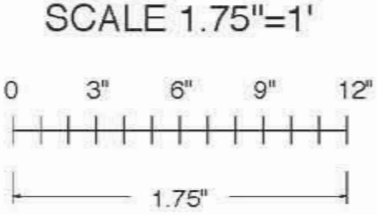
CARD 339 VALVE STEM CROSSHEAD GUIDE

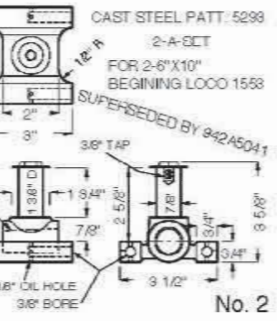


PATT. 5290

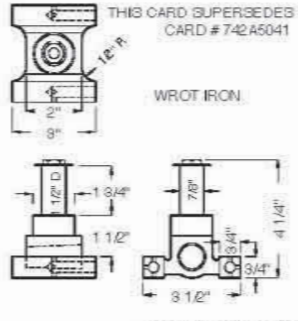
TUMBLING SHAFT BOX CAP
CARD 5308 SET 12

SCALE 1.75"=1'

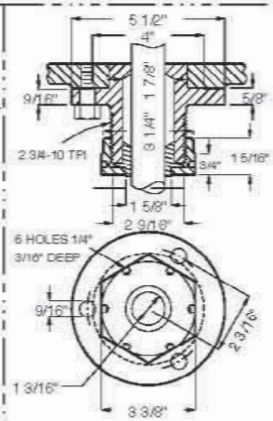




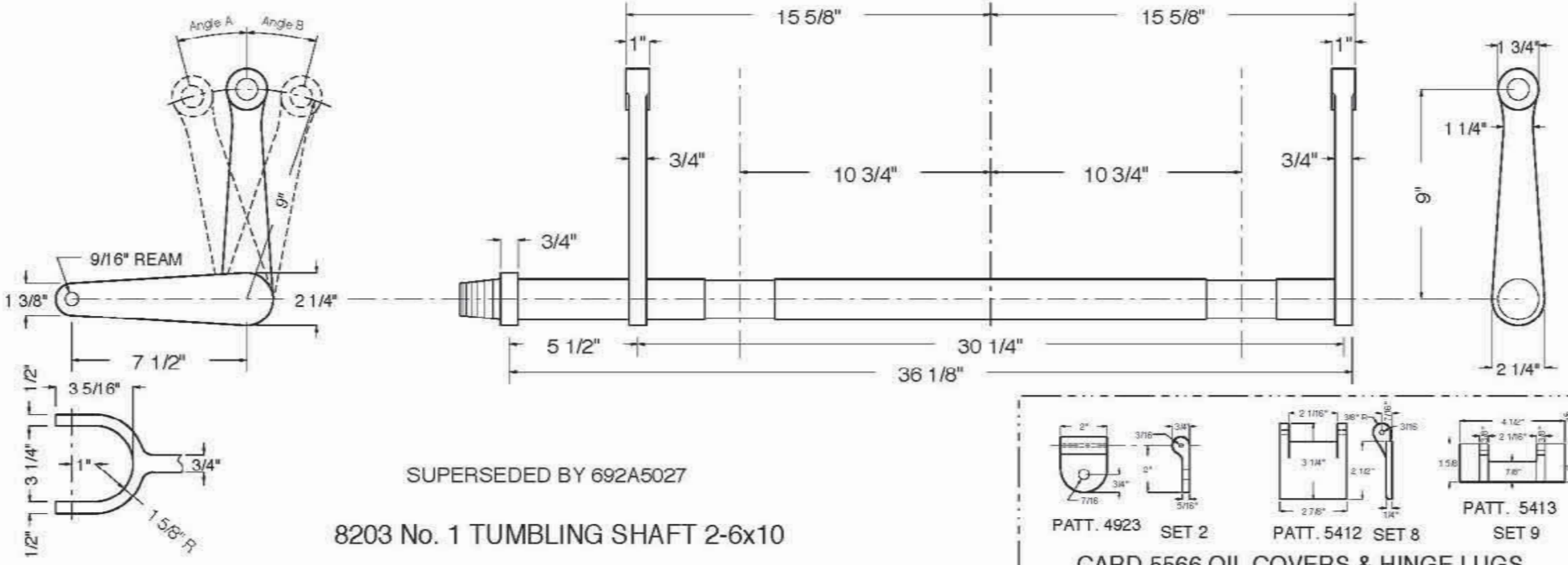
8000 VALVE STEM CROSSHEAD



942A5067 VALVE STEM CROSSHEAD



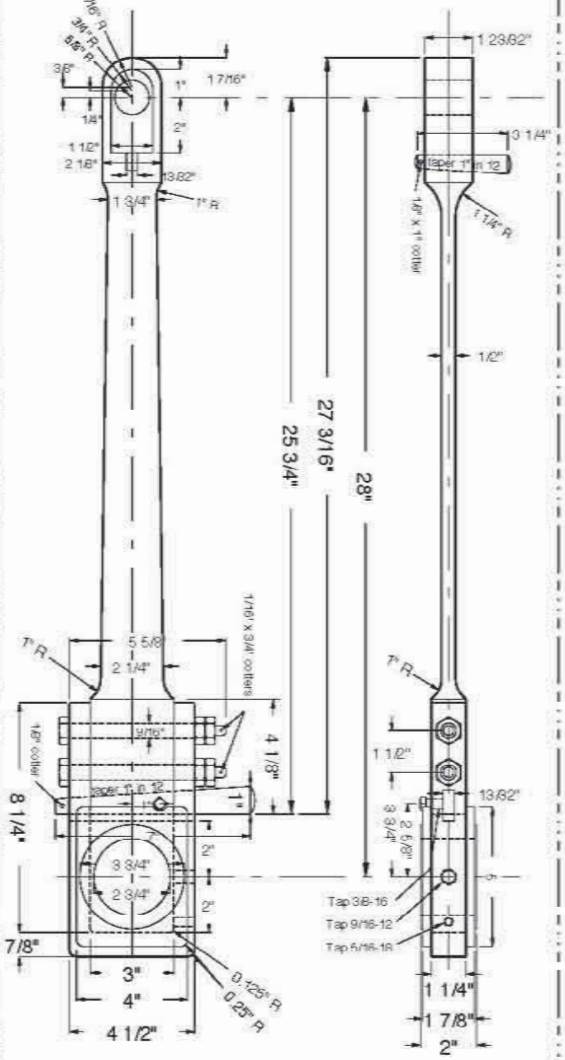
PISTON ROD STUFFING BOX
CARD 369



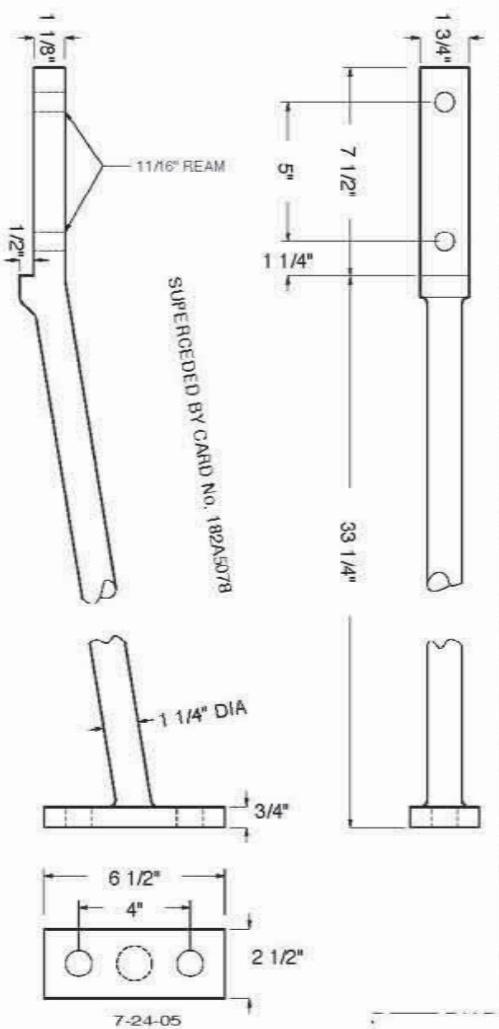
SUPERSEDED BY 692A5027

8203 No. 1 TUMBLING SHAFT 2-6x10

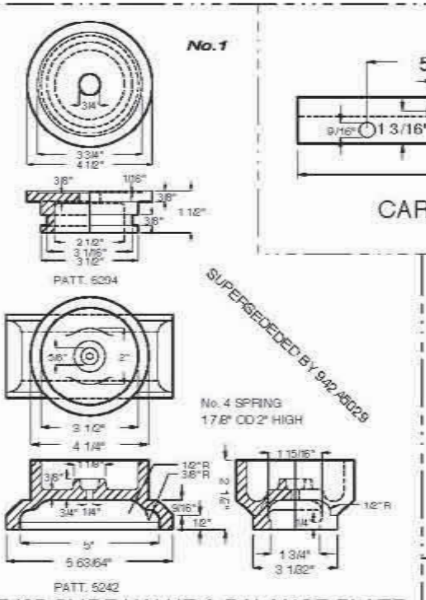
CARD 5566 OIL COVERS & HINGE LUGS



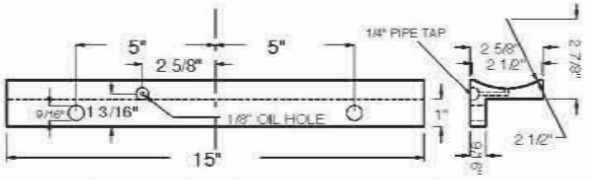
8908 CONNECTING ROD 6x10



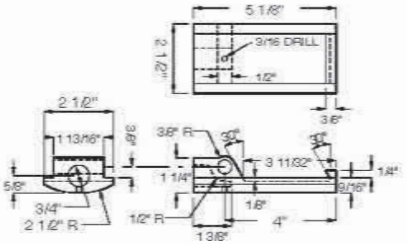
8708 BRACKET BRACE



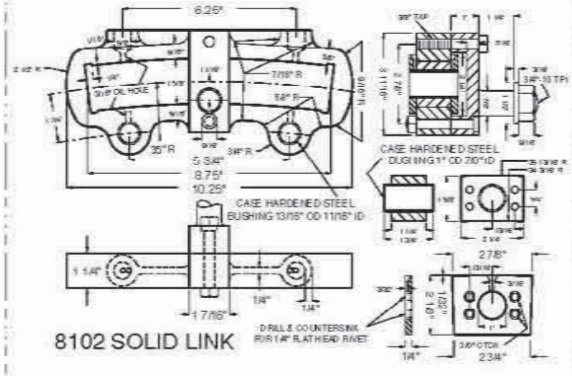
7405 SLIDE VALVE & BALANCE PLATE



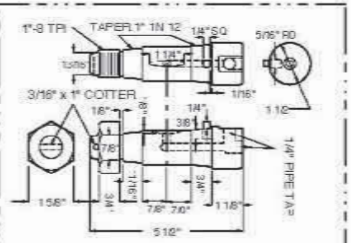
CARD 5058 CROSSHEAD GUIDE



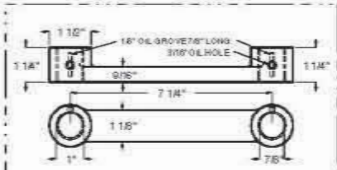
302A5004 CROSSHEAD SHOE



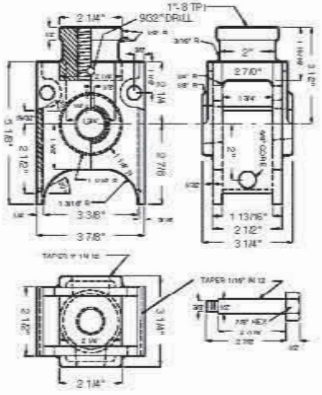
8102 SOLID LINK



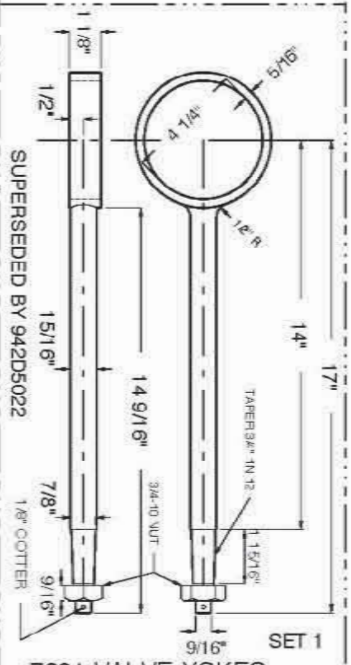
7813 CROSSHEAD PIN No. 5



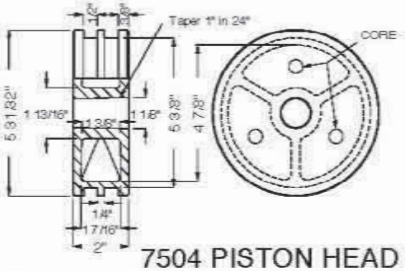
CARD 4009 LINK HANGER



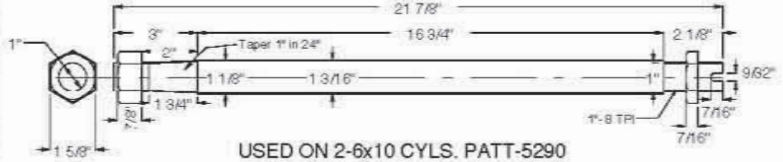
303A5003 CROSSHEAD



7601 VALVE YOKES



7504 PISTON HEAD



SUPERSEDED BY CARD 652A5032

7506 PISTON RODS No. 1

From the SitG Magazine Cover to the Workbench

By Howard Maculsay
All photos by the author

I've been experiencing that urge to build a few new pieces of rolling stock for my Narrow Gauge live steam locos. Then on the cover of SitG (#103) magazine, there was my inspiration. A bevy of log cars just right for my Cricket or my yet-to-be finished Class A Climax.

Searching the internet turned up some log car pictures. I decided on Hartford Products K-38, Russel No. 2 Pattern Log car ***(AA)*** www.hartfordpr.com/k38.htm. Hartford's kit is based on the prototype log cars built by Russel Wheel & Foundry Co. which sold to more than 300 logging railroads. Of course, I will be scratch building most of the log car, but I will purchase the truck, brake, & coupler castings. Dimensionally, I decided on a 20 foot, 15 ton, narrow gauge log car with 6" x 8" stringer timbers & 8" x 8" log bunkers.

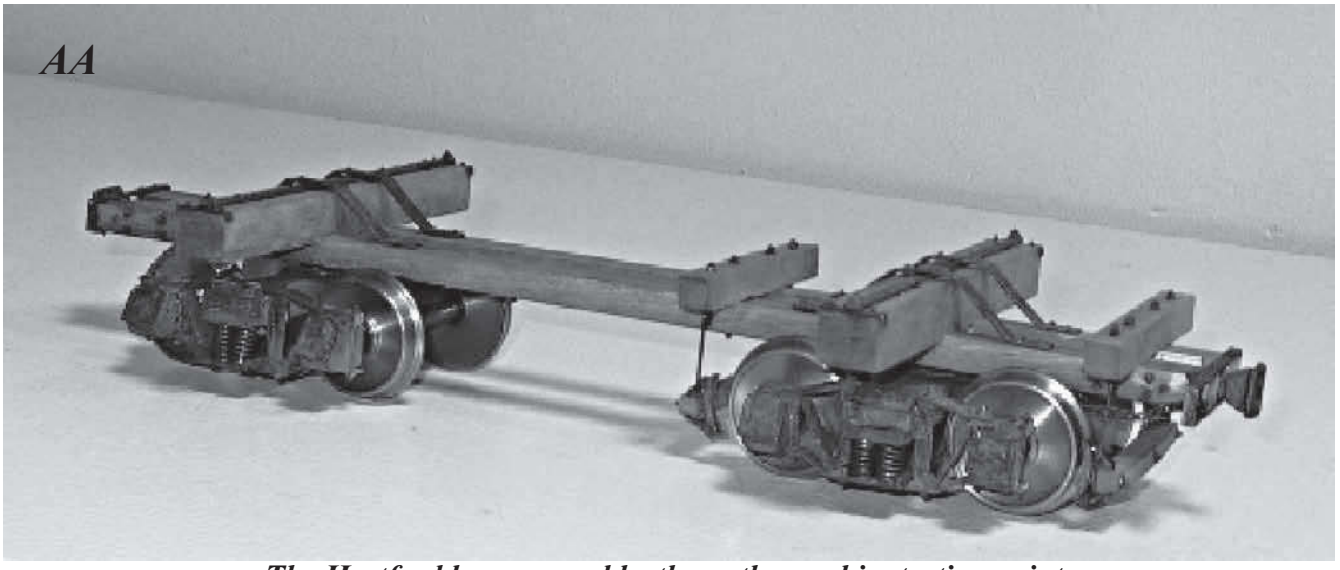
The brake wheel and supports are OM #0038 & #1026 respectively ***(DD & EE)***, to be mounted horizontally under a stringer.. Xed-out parts in the photos were not used.

And finally, I decided on using a sprung draw bar link & pin couplers with draft gear OM #0022 ***(FF & GG)***.

The wood parts will all be cut from Red Oak. With the exception of the NBWs and Bolt Plates, all other parts will be made from brass.

(See Working Drawing)

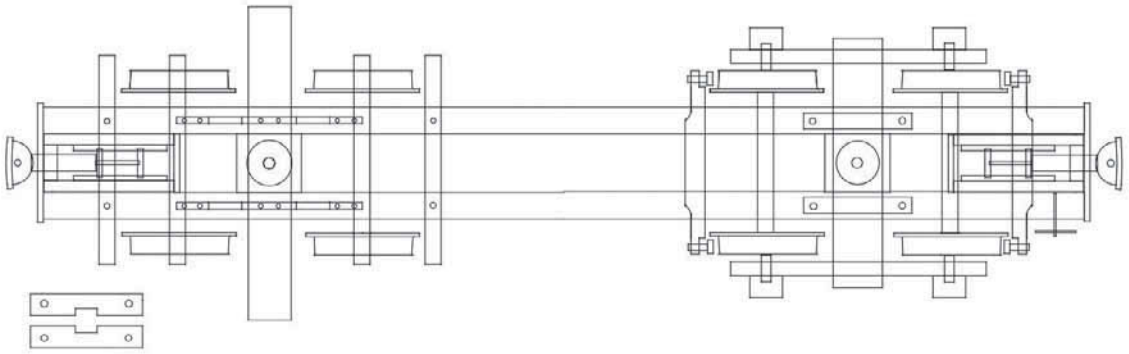
The 2 oak stringers are 5/16" x 7/16" x 12" long separated by an oak stretcher (3/4" x 5/8" x 7/16) at each of the truck's bolster pivot points. This is where each truck is bolted to the frame. Two log bunkers are 1/2" x 1/2" x 3.5/8" long oak. (shown in the drawing over the left end only for clarity sake). Two brake hanger beams are 1/4" square oak by 2.3/4" long and are needed only on the truck that has the brakes. Again



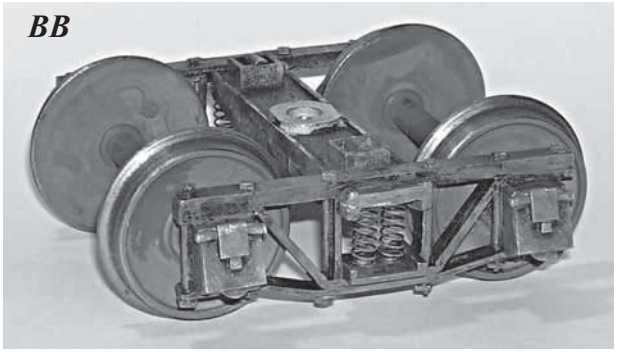
The Hartford log car used by the author as his starting point.

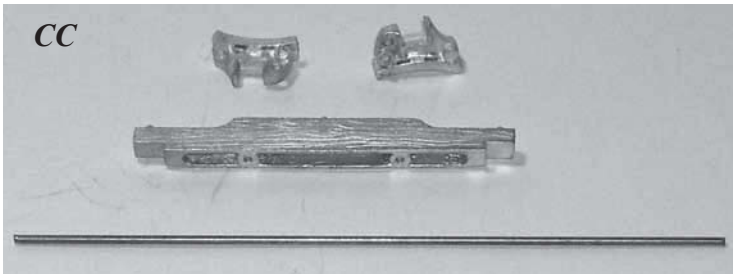
The 1:20.3 scale fully sprung truck set castings and wheels ***(BB)*** are from Ozark Miniatures, OM # 1066 with a prototypical wheel size of 24".

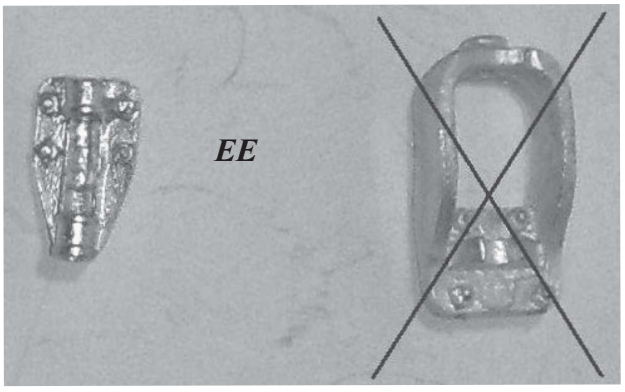
The brake beams and brake shoe castings are OM #1024 ***(CC)*** and are suspended from brake hanger beams on one truck only.

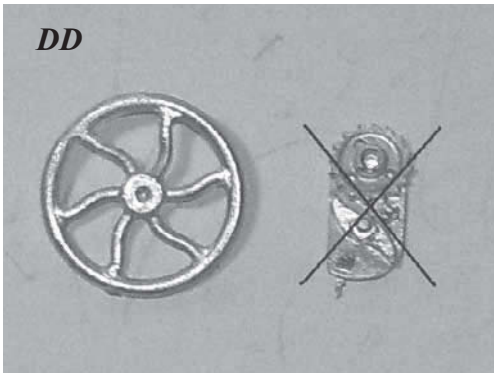


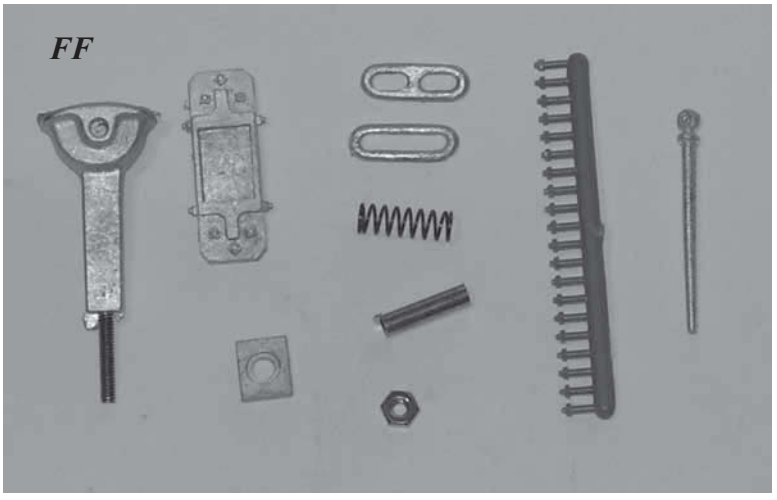
Author's working drawing.

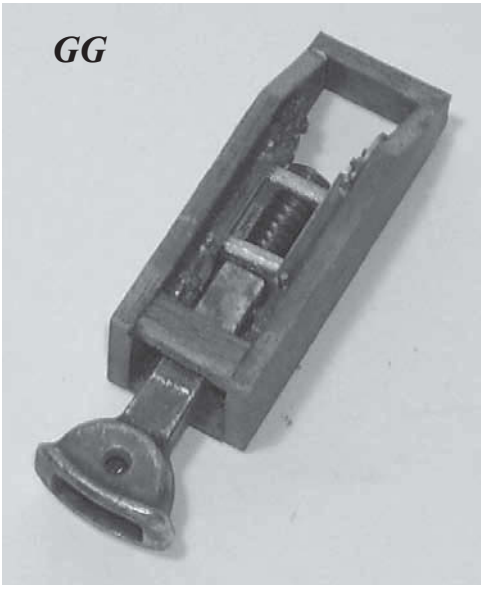


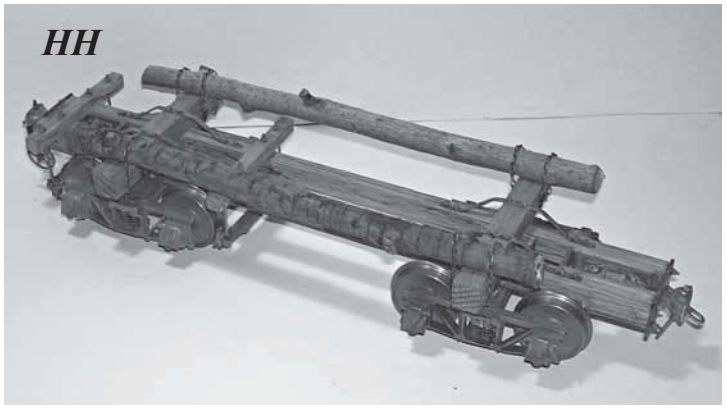


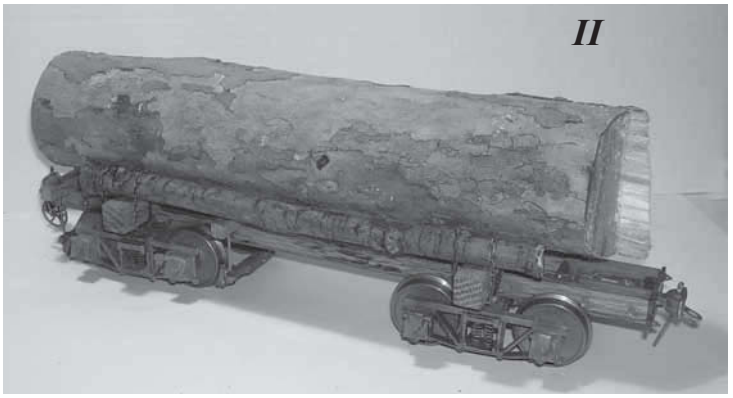












for clarity sake, the brake beam & shoes areshown with the truck drawing (right end), but they belong with the truck that has the brake hangers.

At this point the frame's oak parts were assembled using brass escutcheon pins and CA'd. The holes for each truck's pivot points were drilled through the center of the 2 stretchers, using a 9/64" drill bit. I counter-drilled each top side of the stretcher with a 1/2" spade bit, 1/16" deep to receive a 6-32 tee nut which I pressed into the oak with a small C-clamp. The bottom of the log bunkers were mortised to fit down 1/8" over the frame.

The truck's wheel sets were painted with Badger's Model-Flex "Rust". The axle's bearing surface and where the wheels contact the rails were all left unpainted.

After cleaning up the flash from the truck's castings, (side frames, top bolster & journal covers) they received a chemical blackening and assembled with the wheel sets.

The same treatment was given to the brake wheel and its supports and then assembled. The brake beam casting has a wood grained surface so it was painted to resemble an oak color and assembled with the blackened brake shoes. I used 1/16" brass rod for the hangers, shaped & adjusted to their final length once the hanger beams get mounted on the frame stringers.

The draft timbers for the couplers, adjacent to the draft gear are 1/8" x 3/8" x 1.5/8" long and the 3 cross-braces are cut from 3/16" x 1/8" stock. The length of the cross braces are long enough to position the draft timbers to fit snugly between the frame's stringers (about 5/8"). The castings associated with the coupler, drawbar and its draft gear were also chemically blackened and then assembled with the draft timbers and cross-braces as a sub-assembly. The nut for the draw bars was secured by a little Loctite (blue) to prevent loosening.

Two brass wear-bearing surfaces (.064" x 3/16" x 1.1/4" long) are escutcheon pinned & CA'd to the top each of the oak frame stringers for each of the truck's top bolster. These bearing surfaces are left unpainted.

Then one of the assembled trucks was bolted to the frame at the pivot points, using 6-32 screws. A dab of Loctite (blue) on the threads will keep the proper tightness at the pivot point. At this point the brake beam assemblies were slipped onto the stringers, pinned and CA'd. Now the final truck was put in place and secured.

Next came the positioning of the coupler sub-assembly's height above the track and then CA'd in place. Each coupler has a set of support end plates (.064" x 3/16" x 1.3/8" long) machined from brass, painted and weathered, then CA'd in place at the end of the frame stringers. Each of the log bunkers are secured in place by a pair of 1/32" x 3/32" x 2.142" long pre-formed brass straps, CA'd, then blackened and weathered. The straps were secured to the oak stringers & log bunks using #0 lag screws, 3/16" long.

And now finally, the details, brake wheel and its support assembly, bolt plates, NBWs and the final weathering. The 3⁄4" bolt, 2" hex nuts & washers (NBWs) were used for accents on the Brake Hanger Beams and on the Coupler Draft Gear & its support plates. A pair of Bolt Plates simulating 1.1/4" bolt, 2" nuts on a 6" x 8" pad were used on each side of the 2 stretchers.

I used blackened brass chain to secure the small side logs to the log bunks, which act as a constraint against the log load rolling off the log bunks ***(HH)***.

So now you are ready to find a log of appropriate size for your load. I'm using a 11.1/2" long, 2.1/2" diameter branch piece which represents about a 4' diameter log ***(II).***

I've started building 3 more of these log cars. Since finishing the first car, I found a new supplier of 1:20.3 scale archbar trucks at about half the price.

Needless to say, I'll be giving these a try. The **East Gary Car Company** manufactures a D&RG archbar truck kit. It was reviewed here in the September/October SitG, issue #101.

Parts List

1. Fully Sprung Truck Set, Ozark Miniatures OM #1066, 1:20.3 scale, all metal construction, with 24" Sierra Valley Wheels - $46.34

2. Brake Beam & Brake Shoe castings OM # 1024 - $3.70

3. Brake Wheel OM # 0038 castings - $1.00

4. Boxcar Brake Supports OM # 1026 castings - $1.15

5. Link & Pin coupler w/ draft gear OM # 0022 castings - $8.00

6. Blackened Chain OM # 1022 - $1.07

7. Bolt Plates OM #1012 - $1.06

8. NBWs OM # 0029 - $2.46

9. Brass Strap- 12" x .064" x 3/16" & 12" x 1/32" x 3/32" - $3.00

10.. Hex Head Lag Screws MicroMark #82665 - $3.50

11. Red Oak- 24" x 7/16" x 1.1/2" & 8" x 1/2" square, & 6" x 1⁄4" square - $4.50

Total cost - $75.78

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FOR SALE: Canadian Pacific Royal Hudson #2860 by "Accucraft". Live Steam- Gas Fired, Burgundy and Grey Livery, never run. US$4,000. If interested and would like more information please contact me, Bill Burgess, at willbur@cogeco.ca or 905 849 8623. (104)

FOR SALE: Argyle Locomotive Works 2-6-0 Mogul "Old Star" built by renowned model engineer Gordon Watson: 1:22.5, 45mm. It is outside framed with sprung drivers and full Stephenson valve gear reversible from cab, butane fired single flue boiler with s/s super heater, pressure gauge, sight glass with blow down valve, whistle valve with whistle, roscoe displacement lubricator, hand pump and butane tank in tender and Kadee couplers. It is in very good used condition and is an excellent and sedate runner. This engine was featured on the cover of SITG #34. For sale at $2250. Contact me for pictures and specifics at 209-293-4326 or JimMcDavid@msn.com (104)

FOR SALE: 1:32 Aster German Class 44 2-10-0 Loco that has been steamed up twice. I have photos on request. I would like $5500.00 for it. Alan F. King, phone: 801 554 3738 or e-mail: alanfking45@hotmail.com (104)

FOR SALE: For CP Royal Hudson fans: Candian Pacific Steam, Vol 1 [in color]; Candian Pacific Steam, Vol 2 [in color]; Canadian Pacific Color Guide to Freight and Passenger Equipment [in color]; Candian Steam in the Prairies, Towns & Cities [B&W] with many photos of the Royal Hudson, list price $186.80, sale price $170 plus shipping. THESE BOOKS ARE ALL NEW. Also included at no charge is a collection of zerox drawings of passenger cars [inc. interiors] and some freight equipment. Contact Will Lindley at Thumper12225@prodigy.net. (3/14/09)

FOR SALE: Accucraft C-16. "Rio Grande" number 278, black livery. Excellent runner. $1,695. Contact Paul Kenney. E-mail cocopalms@bellsouth.net, phone 985 868 0826. (3/20/09)

FOR SALE: Accucraft K-28 DRGW #478, includes Accucraft snowplow attachment. New in the box. $4200 plus actual shipping from Virginia. John Reeder, 703-757-5989 or JFR1945@gmail.com -- email me for pictures or additional information. (3/27/09)

FOR SALE: Aster Nickel Plate Road 779 Berkshire, which I built from a kit. The engine has been air tested but not fired. I have built two other Aster kits before the Berkshire and both ran fine. (I was coached by the great Jerry Hyde on the first one.) $6,500.00. Call John Leonard at 269-857-2860 or email me at john@jmlllc.com (4/1/09)

FOR SALE: 1) Ruby 2, unmodified, in orginal box. Has been used some. Good condition. $300 plus shipping and insurance.
2) IP Engineering Jane. Spirit fired, burgundy color. $250 plus shipping and insurance. I can be contacted at e-mail: steamnteach@aol.com Steve Jarvis (5/7/09)

Swap Shop listings are offered at no charge as space permits. No dealers and no phone-in ads, please! Send your listings to SitG, PO Box 335, Newark Valley NY 13811 ● fax to 253-323-2125 ● e-mail to <rbrown54@stny.rr.com>. Ads must contain sellers name, plus address and/or phone number. Ads will be run one time only unless previous arrangements are made.

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