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# STEAM IN THE GARDEN



*Inside.....*

**Accucraft S-12 Switcher Review**

**2006 National Summer Steamup Report**

**The Much =-Maligned Mamod SL-1**

**A Visit to the Bucksgahude & Western**





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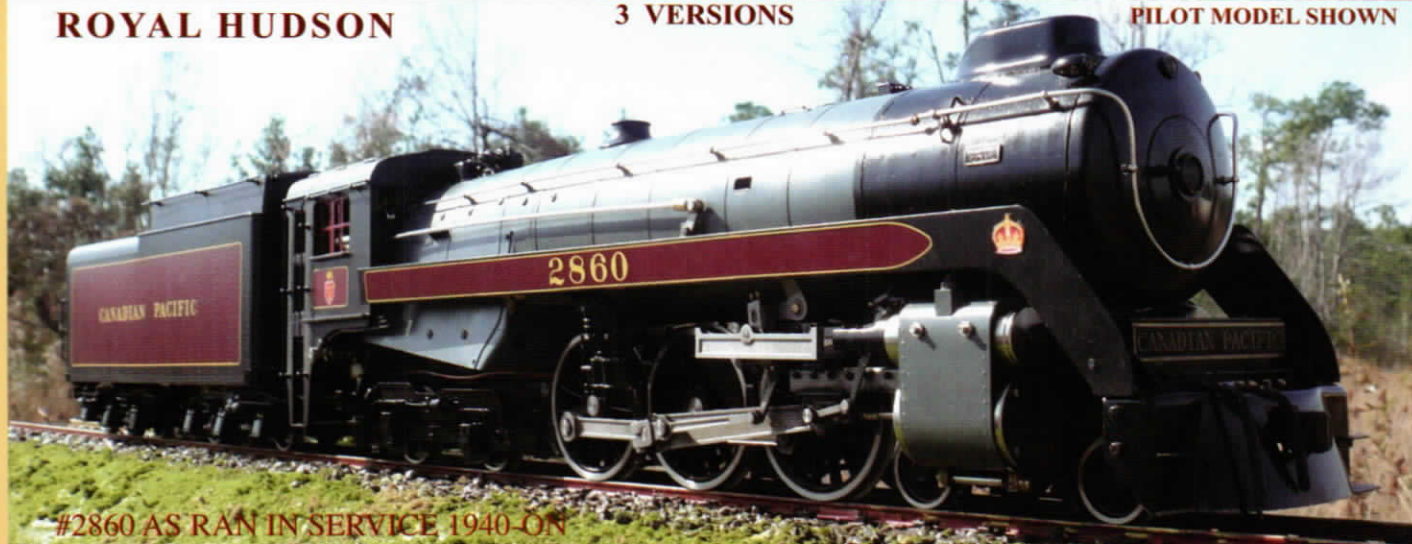


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# STEAM IN THE GARDEN

Vol. 17, N<sup>o</sup> 1  
Issue N<sup>o</sup> 91

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

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### FRONT COVER:

Betty with a string of empty log cars headed for the woods. Betty is the 1st Place Winner in our 2006 WILLI Bashing Contest, beautifully crafted and detailed by Jerry Sheehan of Florida. You can find the results of the contest and photos of the other winners in this issue.

photo by Jerry Sheehan

Editor  
Ron Brown

Faithful Assistant  
*Marie Brown*

### CAD & Other Drawings in This Issue

Dan Rowe • Joe Leccese

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\*\*\*\*\*

Sacramento, California  
via e-mail

Hi Gang,

I just received, and read with much joy, SitG issue #90. After reading the articles, and viewing the photos by Andy Ross (Class A Climax) and Charlie Mynhier (rivets for his "O" Scale articulated loco) I now understand why I do not scratch build my live steam locomotives.

Simply stated, I do not have the extreme patience, nor the inherent skill, that both of these gentleman have exhibited in their letting us look at their work; I am in awe of both of them.

45mm live steam is a big hobby, and there is room for all of us in it, no matter our skill level or depth of pocketbook (er...ah...her pocketbook?). Each of us has a valuable contribution to make even if it is to only "oooh and aaah" over such "eye candy" that others produce. I look forward to more of the same in future issues of SitG.

The Edrig burner that was wire wrapped by Sal Martocci, and that is shown on page 9 of the loco review, would be noticeably improved in operation if it had a tapered sleeve under it much like the Ruby burner in the same photo. One can see by the discoloration of the wire mesh that the burner is over firing at the end of the poker. By placing a tapered (even more tapered at the business end of the poker than the Ruby burner) sleeve under the heavier mesh on the Edrig poker, that the flame will be forced evenly back along the length of the poker. This will result in an even, docile, and quiet flame in spite of the too-large-an-orifice stock Accucraft gas jet.

Best regards,  
KO-5

\*\*\*\*\*

Renselaer, NY  
via e-mail

Ron:

Wow!!!, The SitG arrived today (issue #90) and was I impressed with the machine work displayed. There are some fine machinists out there, which makes me reluctant to submit anything for publication.

However, I am attaching two shots of a water pump made from a servo. It has worked quite well but the one in the photo has some features I think are an improvement.

I have also included a drawing of the circuitry to determine the water

level in a boiler. I built one last winter and it's in the PRR tug I built. I really enjoy the magazine.

Best regards,  
Ken Parkinson

(Ken's water pump, water level detection circuit and an improvement to the popular Goodall Valve can be found in this issue. ed.)



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# *Accucraft's Southern Pacific S-12 0-6-0 Live Steam Locomotive*

by Mike Moore



*Accucraft's Southern Pacific S-12 Switcher*

The Southern Pacific Company used a large number of 0-6-0 switcher locomotives around their passenger terminals. Starting in 1927 some of these switchers were spruced up with colorful paint schemes, raised lettering and other trimmings by the shop crews during their spare time. Since the work was done at the direction of the shop management rather than the central office there was no standard for this treatment. Some cabs roofs were painted an oxide or tile red. Boiler jackets might be painted in green, gray, or blue. Some locomotives were endowed with raised nickel plated or stainless steel lettering or nickel plated cylinder covers and handrails. On several locomotives a "Sunset" Southern Pacific herald was painted on the cab side. This practice was continued through the 1950's and almost 30 engines were dressed up in this fashion.

Accucraft has released a model of Southern Pacific's S-12 class of 0-6-0 switcher locomotive. The locomotive is being offered in black, grey, green, blue, blue or black with raised lettering, and unlettered black. The locomotive is accompanied by a Vanderbilt tender with oil bunker and is shipped with a metal locomotive carrier.

## **Technical Details:**

Boiler: Gas-fired with a single flue copper boiler.  
Fittings: Safety valve, Water glass, Pressure Gauge,  
Hand Pump in Tender with Backhead  
Mounted Check Valve, Displacement  
Lubricator in Cab with Drain  
Cylinders: 2 cylinders of 14mm (9/16") bore and  
19mm (3/4") stroke, D valves with  
Simulated Walschaerts valve gear.  
Scale: 1:32  
Gauge: 45mm  
Minimum Radius: 30 inches  
Length: 24 inches (approximately)

## **First Impressions**

I ordered the unlettered black version of the locomotive from Cross Creek Engineering. The locomotive was delivered at the IE&W Spring Steamup. Cross Creek had unpacked and inspected the locomotive and discovered that the tender drawbar had been damaged in shipment. A replacement had been





*Space inside the cab is tight, but the controls are accessible.*

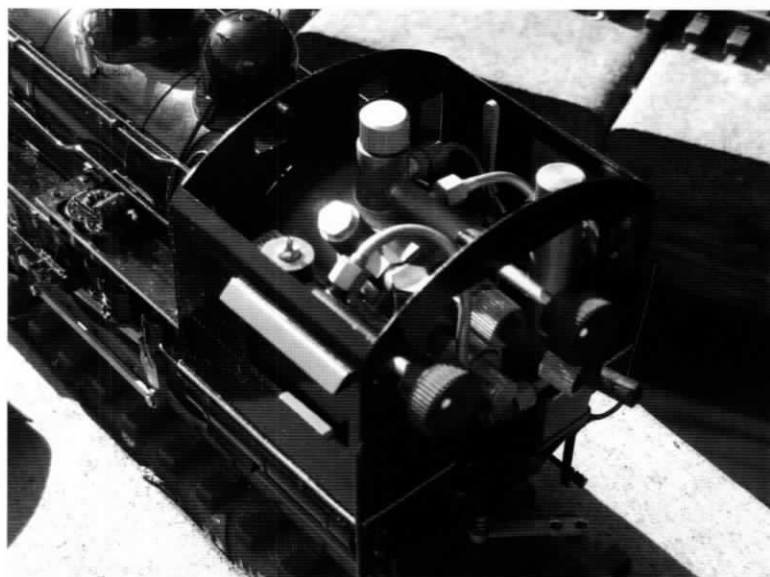
ordered from Accucraft and installed by Cross Creek. Apparently, the locomotive had been shipped coupled to the tender and had suffered a shock sufficiently strong enough to knock the drawbar loose. More about the drawbar later.

The locomotive arrived packed in its steel carrier with a double box buffered by foam. In the package were the locomotive and tender, manual, boiler pressure test certificate, and a syringe. The level of detail on the model is very good. This includes fine rivet detail, air tanks, air compressor, injectors and check valves, generators, and whistle. The butane tank for this locomotive is located along the left side of the cab. Directional control is accomplished by a Johnson bar located on the right side of the cab. Steam to the cylinders is taken off a bush at the top of the boiler and controlled by a needle valve. The steam passes through the displacement lubricator then through the flue to the front of the locomotive. Fitting the fuel tank, water gauge, pres-

sure gauge, lubricator, and Johnson bar all in the cab makes for a very tight cab space. There isn't much room to fit radio control servos in the cab. The cab roof is removable and is attached via a parallel linkage which allows it to be flipped to the side.

The tender is a Vanderbilt type tender with an oil tank. The top of the oil tank is removable and a rather large hand pump is fitted underneath. A hose leads directly from the top of the tender pump to a backhead check valve placed just under the throttle. The opening for the hose is not sealed and acts as an overflow. The entire interior space in the tender is open, leaving ample space for water. The tender is as well detailed as the locomotive and includes a backup light, handrails, non-working water hatch, and truck detail. The tender is furnished with a pin on its front beam which inserts into the spring loaded drawbar from the locomotive. Both the tender and locomotive are furnished with non-operating Accucraft knuckle couplers.

Since my locomotive is non-lettered I took the opportunity to examine another S-12, the blue-boilered version with raised lettering.



*Hinged cab roof for better access inside the cab.*

The tender is lettered "Southern Pacific Lines". A color Southern Pacific sunset herald is placed on the cab side just ahead of the engineer's window. The engine number is centered on the cab under the window. The class identification is shown at the lower left, and the class data at the lower right. The class data includes the cylinder bore and stroke. One of this magazine's readers pointed out that the numbers used here are incorrect. The model shows a cylinder bore of 26" and a stroke of 32". The prototype had a 20" bore and a 26" stroke. An examination of the lettering on an Accucraft GS4 4-8-4 shows the 26/32 combination so it looks like the GS4 Daylight sizes were inadvertently used on the S-12 switcher.



*The tender is nicely detailed, but the non-working knuckle coupler makes switching difficult.*



*The S-12, filled with water and fuel, moves out of the yard. A well detailed loco with good running characteristics, it gets good grades from the author.*

### ***Running Experiences***

I was anxious to see the locomotive perform so I signed up for a running time and started prepping the engine. I oiled all around, filled the tender with water and the boiler via the hand pump. The hand pump seems a bit oversize for the small check valve and if I pumped too hard the hose between the two would bulge ominously. The boiler did fill quite rapidly. After filling the boiler I topped off the water in the tender, filled the lubricator with steam oil and the fuel tank. I opened front of the smoke box, turned on the gas slightly, and lit the burner. The burner lit and the flame immediately stabilized. The front of the smoke box was closed and the gas turned up. Note that it is possible to turn the gas high enough to cause the flame to pass into the smoke box, so if



you don't want a scorched smoke box front go easy on the gas.

It took about 5 minutes to raise steam to 60 psi on the pressure gauge and off to the track I went. Since the Johnson bar is deep inside the cab in front of the lubricator it is easiest to raise the roof to change direction. The throttle knob protrudes far enough behind the roof to enable throttle control with the roof in place. The locomotive was easy to control with the throttle and trundled smoothly down to the yard to pick up a train. The safety valves were blowing off almost continuously so I turned down the gas to nearly off. I picked up a train consisting of nine Accucraft PFE reefers and a caboose and entered the main line. The locomotive pulled this train with ease, and unless I kept the gas turned down the safeties continued to blow off. After about 20 minutes of running I pulled into a siding and topped off the boiler from the hand pump. I took the opportunity to top off the fuel tank as well. I ran for a few more minutes and then noticed some strange behavior from the train. The drawbar had come loose at the locomotive side and the tender was only connected to the locomotive by the water pump hose. I returned the train to the yard and shut-down the engine. I consulted with Cross Creek and they promised to place an order for a new drawbar with Accucraft.

When I got the locomotive home I examined the drawbar. The drawbar is held to the locomotive by a bolt into a bushing through a beam under the cab. The bushing is held on by soft solder and on my locomotive the solder had covered less than 1/3 of the diameter of the bushing. I removed the beam, cleaned up the solder joint and resoldered the bushing. I replaced the beam and drawbar and have not had any trouble since. The replacement drawbar from Accucraft arrived a few days later and I have kept it for a spare.

After repairing the drawbar I spent another day at the IE&W Railway and ran some more trials. The locomotive steamed very well. In fact, even pulling 20+ cars I had to keep the gas turned way down to avoid the safeties blowing off. I may have to try a smaller jet to give me more range in gas control. After a few runs I noticed that the water pump did not seem to be filling the boiler as well as previously. Eventually, it seemed no water was entering the boiler so I shutdown the engine before causing damage to the boiler. I found a leak in the water pump so I removed the pump to determine if there was an easy fix. The pump cylinder is pressed on to the pump body and this joint had worked loose enough for water to seep through. I cleaned up the joint and soldered it together to provide a better seal. While I had the pump out I noticed that the E-clips holding the linkage pins were rusting, so I replaced the steel E-clips with stainless steel clips. I replaced the pump and have not

had any more problems.

While I am pleased with the performance of this locomotive, there are a few things that I wish Accucraft had done differently:

- Operating couplers would have been better than the non-operating couplers. Since this is a switching locomotive it is annoying to have to lift a car to couple up for every switching move.
- It is going to be difficult to radio control this model. There isn't much convenient space for servos in the cab and there is no battery or radio space in the tender. My intended use for this locomotive was to act as a switcher, making up trains in the yard for mainline locomotives to pull on the layout. I would prefer to do this under radio control.
- The water consumption seems high even when the gas is turned down far enough to keep the safeties from blowing off.

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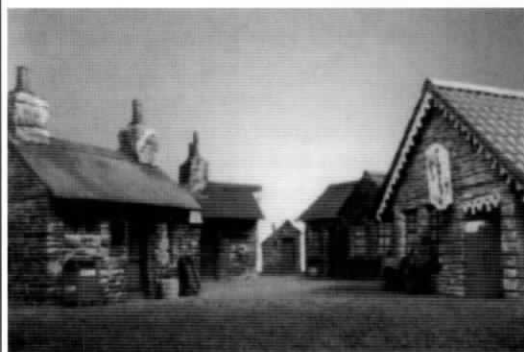
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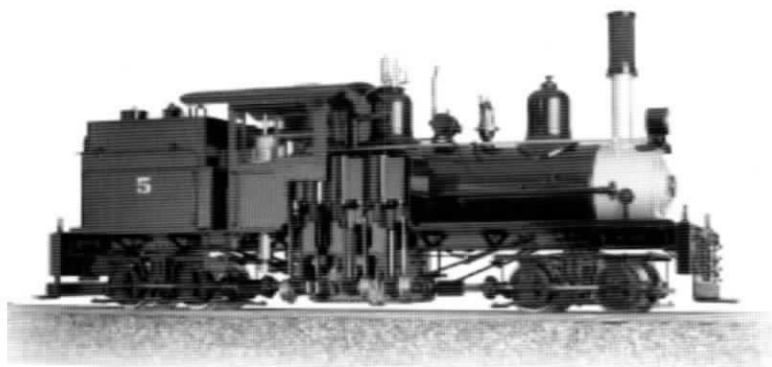
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# *Coal Firing Revisited*

by Jeff Young

## **Introduction**

It's been a couple of years since I took delivery of my Shawe Steam Services "Black Adder" and an even longer time since any discussion in SitG has appeared regarding the gentle art of coal firing. In scanning the small scale live steam discussion boards, the interest in coal firing grows continuously. Perhaps this is due to the coal firing conversion kits for Accucraft locomotives now being offered by David Bailey's DJB Engineering. What follows are some random observations, hints and tricks that I've learned over the last few years.

## **Charcoal**

It is well known that coal fired locomotives are initially fired using hardwood charcoal. Buying charcoal intended for the barbecue grill and crushing it to the proper size is messy proposition. Quite frankly, it seems that you end up making more dust than useable hunks of the right size. A good source of material already crushed to the appropriate size is something called agricultural (or horticultural) charcoal. Apparently charcoal is an important ingredient in the planting pot for growing African violets. Try larger garden centers or greenhouses, they usually have them in



one or five pound bags (it goes a long way). If your local garden center does not stock it, see if there is an African Violet Society in your area - they might be able to help you.

It is often recommended to use either meths or kerosene to soak the charcoal. I found that the meths drips everywhere and very quickly you can have a fire in the cab, on your shovel, or worse - in the tub of soaked charcoal. Kerosene burns less vigorously and does not seem to get all over the place like meths. Also, the fumes seem to be less offensive and irritating (to me, anyway). I have heard of others using lamp oil, but since I already have a rather large jug of kerosene lying around for other nefarious reasons, I've stuck with it for the time being.

## Coal

After lots of experiments, I still believe that Welsh steam coal is the best choice for our little locomotives. It can be obtained on our side of the Atlantic from Coles Power Models and in the UK from Signal Fuels. I get the smallest size (known as "bean" size), and even that contains numerous pieces that are way too large to fit through the firebox opening. The method I use to crush coal to the proper size is one that I learned from fellow coal firing enthusiast, John Coughran. Take your vise grips, set the gap to the diameter of your firebox door. Grab the oversize piece of coal with the vice grips and squeeze. If it is oversize in the other dimension, repeat the action with the vice grips. It's crude, but effective- and generates less dust than the pounding with a hammer. I then screen the coal through a 1/4" screen and give the smaller stuff to the O scale and G scale sparkie guys for coal loads.

When bunkering-up the tender, I push the coal pieces that are on the smaller size to one side. I use this stuff when introducing coal to the charcoal fire at the start of a run. The smaller pieces catch fire and burn more rapidly, making the switch to coal much easier and quicker. During the course of a run, I use the largest pieces that will fit through firebox opening. The logic is simple- the bigger the piece, the slower it burns. The slower the coal pieces burn, the less you have to stop and stoke the fire.

Although I swear by Welsh steam coal, I do keep some other coal around for "special effects" (usually the varieties that either clinker badly or do not burn as cleanly). During the last 10 minutes or so of a run, I toss a few wee bits of Pennsylvania anthracite on the fire. It is usually the last coal I add and therefore I am not concerned with the fire clinking up. It produces a more intense aroma, as well as rather thick gray smoke and the spectators seem to really appreciate it.

The Achilles heel of small scale live steam coal firing is leaving the fire door open too long while tending the fire. When the door is open, cold air is drawn through the

firehole and through the tubes, effectively killing the draft through the fire. Without a good draft, the small coal fire dies rather quickly. The secret is to open the door, shovel in the coal (and get it where you want it on the fire), then close the door as quickly as possible. The largest firing shovel possible helps as well. Norm Saley made a rather nice one for me from brass. It has a round scoop which holds much more coal than a flat shovel. As well, the large round cross section of the back of the scoop help block cold air coming in through the fire hole as I fiddle getting the pieces of coal to get them in the right place in the firebox. Norm also cleverly drilled out the shank so that it can be used as the handle on the tender hand pump - two tools in one.

## Cleanup

I find that vacuuming out the firebox and ash pan is a quick way to clean up the locomotive. When I brush the flues from the firebox end of the locomotive, I do so with the smoke box door in place and the hose from the Shopvac over the stack. This way, the soot from brushing the tubes gets sucked out of the way. Speaking of the stack, check it occasionally as well for a buildup of gummy residue (a combination of cinders and steam oil from the exhaust). The residue will eventually reduce the stack opening and affect the draft of the locomotive. A Q-tip dipped in thinner or lighter fluid will remove it easily.

As a final touch, I like to wipe down the locomotive thoroughly, especially to get any the cinders or ash out of the running gear. Perhaps it is the appeal of those gleaming vintage locomotives, but I also like my locomotive's glossy paint to shine. One product that I found that is particularly useful (recommended to me by a fellow live steamer) is Harley Davidson's "Harley Spray Cleaner and Polish". I spray a bit on a shop towel and rub the locomotive down. It leaves a nice shine on the locomotive that would make any old-time locomotive wiper proud!

## Conclusion

I hope that you have found some of these coal firing tidbits of interest. If you have tips or hints of your own, I invite you to share them through this magazine, as the ranks of small scale coal firing enthusiasts is growing steadily and we are all eager to learn.



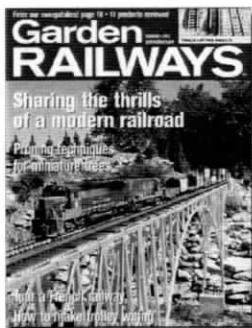


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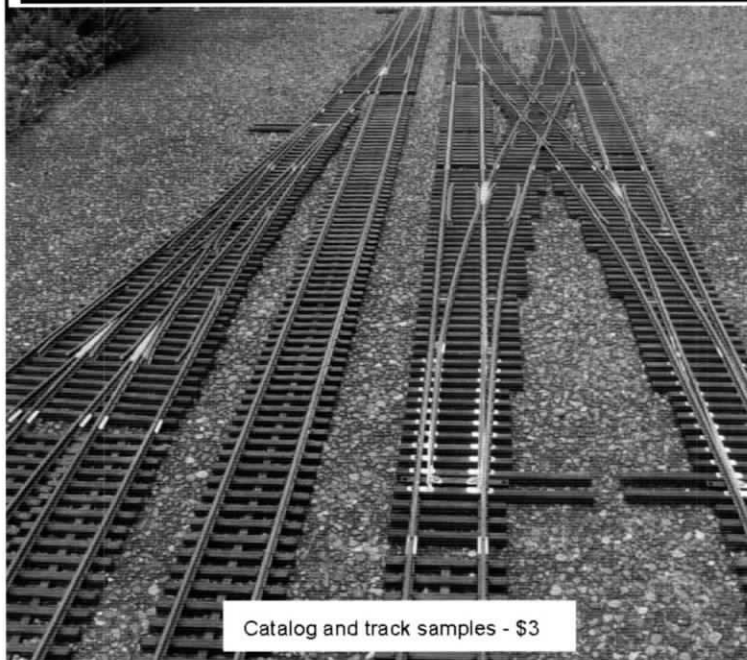
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# Improving the Goodall-Type Valve

by Ken Parkinson

## *Making a popular item even better...*

I often refer to my skills at mechanical drawing as "A pig with a pen", but I wanted to share the results of my latest R&D with SitG readers. These include a servo driven water pump, a circuit to detect low water level in the boiler, and an improvement on the ubiquitous Goodall Valve.

To make the improved Goodall Valve - center stock and drill to 1/6 inch of overall length. Taper entry with a taper reamer or carefully with a needle file to conform to connection with water supply tubing, or thread to a suitable connection. Cross drilling intersects the center hole. Add the "O" ring and it's ready to use. The "O" ring will nicely close the holes from external pressure.

It's important that the hole must be 1/6 th inch short of the entire length of the device. In other words, it is a blind hole with exit to boiler by way of the horizontal holes under the "O" ring *only*.

### **Bill of Materials for Valve:**

Stock-----Brass 5/16" or 3/8"

"O" ring-----.250" OD , .125" ID

Thread-----To Suit

Groove----- .0625" deep & width .010" wider than "O" ring

Holes-----Thru .0937" Carefully remove any burrs.



*The author's new and improved Goodall-Type Valve.*

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## ***Bucksgahuda & Western "Where the Geese Wear Pants"***

**by Carl Berg**

What if I said that full size narrow gauge was alive and well in Western Pennsylvania? What if I said a genuine two foot gauge Henschel 0-4-0T named "Otto", built in 1939, recently celebrated 40 years of operating in the woods there? What if I said

a boxcar full of speeders: Fairmont's and those other ones, powered by air-cooled flat twins with exposed valve gear and variable speed transmissions. There are handcars, a tricycle, and rolling stock - lots of rolling stock - in use or on other sidings. There are mining cars that look just like the models, only bet-



***Bringing a load of passengers through the woods.***

its steamy companion, a freelance two cylinder Shay, as charming a piece of Americana as you are likely to see, can be found there too? What if I said these locomotives are only part of a stud that includes gas powered industrial locomotives, the number of which I'm not really sure of as they are tucked here and there in buildings and on sidings and elsewhere? There's

ter, and they are weathered to perfection. There is enough trackside flotsam and jetsam to give the most jaded scenic layout enthusiast Technicolor dreams.

I'd heard, or rather overheard, about this place a couple of years ago at a small model engineering show. A narrow gauge continental locomotive that could be seen operating on the host club's open days existed somewhere in Western Pennsylvania. I didn't



get the particulars from the individual and when I tried to follow up later with attendees I knew, I drew a blank. Over the months I asked around, but still no leads. Then, one day I was talking to Frank Ulman while visiting PLS. Frank is a fine modeler with an understated sense of humor. He is also quite knowledgeable about railroading in Pennsylvania, which is saying a lot. You can't turn over a rock in that state without finding some history underneath it. Anyway, I put the question to Frank and he said, "Of course, it's a Henschel tank locomotive. There's also a Shay. They're at the B&W Railroad, south of St. Mary's. The dirt road to the shops is just past the sign to Kersey. Open days are the third Sunday in August and the third Sunday in September."

Just like that. It always helps to ask the right person. I checked the map. St. Mary's is East of Rte 219 and maybe 50 miles south of the NY/Penn border, about 2 1/2 - 3 hrs from my house. Came the 3rd Sunday in August I arose early, packed sandwiches and drinks in a cooler, and headed south. It was a pleasant ride on uncrowded, mostly two lane roads. Once in Pennsylvania the route led through charming little towns where there's always something interesting to see. St. Mary's is such a town, though larger than the others. There's a sense that time passes a little more slowly here. Through the town, past the supercenter, watching the roadside for the sign to Kersey. How much farther is the road to the shops? There's the sign to Kersey and SIX FEET past it is the road to the B & W. I back up and turn in.

Driving in, it seems my head is on a swivel. So many things to look at. Two foot gauge is not a big part of my experience so everything is interesting. Tracks, switches, a water tower, turntable and the unmistakable angular outline of a European narrow gauge locomotive. There's a little smoke and heat distorted air above the stack. It is in the 3 1/2 hour process of firing up. People are walking purposefully back and forth. In response to my question I'm told it's okay to look around.

There's nothing like being in the presence of the real thing. Despite the date on the name plate, "Otto" appears to be a well cared for, working locomotive. Nothing looks worn. Even though I have little experience with full scale, my interest in models is helpful in decoding the purpose of valves, plumbing and linkages.

I also inspected the Shay. It isn't being fired yet. Since it is homemade I feel a closer connection to it. Careful inspection reinforces a growing feeling: It's so well laid out I'm jealous. I'm informed the en-

gine used for the Shay originally powered a sawmill. It has a reversing mechanism I haven't seen before, though it's hard to tell as the engine is in the shade and painted black.

I look into the buildings and a steel boxcar grounded on concrete piers. All sorts of interesting things are to be seen.

Operations don't begin until the afternoon so there's plenty of time to inspect the track. It leads from the yard down a grade behind the main engine house. There's a siding with a number of mining cars, then a switch. I follow the line ahead. It levels out and goes through the woods on an old right of way. The trunks of the trees go straight up thirty or forty feet before they branch, so this woods has been here awhile. The hillside above the track has obviously been disturbed sometime in the past, perhaps a mining operation. I come to a "Y" and continue on to the end of the track, maybe a 1/4 mile or so from the engine house. As I'm walking back, one of the gas powered locomotives halts and the youthful engineer asks if I want a ride. Why not? I climb aboard and with engine sounds, gear noises, rattles and clanks we get underway. We slow as we go through the switches in the "Y". The engineer, speaking sharply in a voice that can only be ascribed to an older sister, reminds a younger passenger that arms and legs have to remain inside the car.

Back in the yard I meet up with Frank Ulman. He fills me in on some of the history of the area. There's a cut right next to the access road that was the right of way for the Shawmut RR. There's even a Shawmut Caboose back near the edge of the woods.

We look at "Otto" again. Frank reminisces that he visited the Henschel Factory during WWII. "Otto" was found and brought back from Europe in 1966. It was purchased for \$3000, about what you would have paid for a plain vanilla Olds 442 back then.

There's still time for another walk before things start to get busy, so Frank agrees to accompany me around the loop. It begins at the left leg of the switch past the siding with the mining cars. The grade is very steep. You could easily ski down this slope. There's more stuff along the side of the track: wheels, jumbles of rail, piles of maintenance-of-way and repair materials. The grade is amazing and Frank explains they use all the brakes when going down. There's a sharp turn at the bottom of the grade and the track crosses a wooden bridge and begins its climb back up the slope. I'm impressed that "Otto" can manage this grade, but Frank assures me he can...though wet leaves or something else that makes the track slippery can stall the

progress upward.

A final sharp turn brings us back to the yard elevation as the day's operations begin to get underway. "Otto" is maneuvered to hook up to its 3 car train and taken to the station area to pick up passengers. Frank and I get on board the open car. The back of the car ahead has a large standard gauge brake wheel mounted on it. A whistle blast and we move through the yard and descend the grade to the out and back. Frank points to a metal rod and bar sticking out of a tree trunk. Perhaps there was a wreck or a trackside abandonment and the tree grew up through it. Either way, it was a long time ago.

We return to the edge of the yard and the switch is thrown to the loop track. We ease off down the grade. The brakeman on the car ahead cranks the wheel and we make a steady, occasionally squeaky, descent. We enter the turn, cross the bridge and begin to climb. Progress is still steady. I try to calculate in my head, considering the weight of "Otto" and three cars full of adults and children. There's quite a bit here to lift against gravity. It's amazing. We return to the station and debark.

There's activity around the Shay. I was wondering whether it was going to be run today, considering how long it took to get "Otto" up to pressure. I learn the Shay is oil fired and has a return flue boiler. A pressurized burner blows flames along the bottom of the boiler front to back where the heat rises to enter the flue tubes, then goes forward into the smoke box and up the stack. In modelspeak, it is an interesting variation of a type "C" boiler. The burner is fed with compressed air until the boiler gets to minimum pressure. (It may have been 30 lbs.) Then, air is transitioned to steam, the fuel feed is adjusted, and the pressure gauge needle swings up to operational levels. The airline is disconnected and it's ready for revenue.

Frank has arranged for a cab ride. It's a little crowded but very interesting. With two locos operating, the reason for all the hand held radios becomes clear. Switching operations have to be coordinated as each loco loads and unloads at the station, takes on water and proceeds to its respective trackage, the Shay going out and back, "Otto" taking the loop.

My cab ride concluded, I step back to take in the entire scene. The crowd has grown considerably. "Otto" is at the station taking on passengers as the Shay disappears behind the engine house. A round of firing is taking place as "Otto" waits, witnessed by the roiling column of brown gray smoke rising from the stack. A down draft sweeps a translucent gray curtain

though the waiting crowd, bestowing everyone with a reminder of where they are today.

I mentioned to Frank that I noticed "Otto's" engineer really manipulated the reversing gear as he brought the train up around the turn and into the station. It was quite obvious on the valve gear as the pin in the slotted link bobbed up and down coming to rest in the mid position when "Otto" came to a stop. Frank commented I should watch the descent.

I found a spot to view the proceedings and waited. As "Otto" came down the grade the pin in the slotted link rose past midpoint and into reverse. This was accompanied by what appeared to be a controlled admission of steam into the cylinders. I'd read about putting locomotives in reverse to bring them to a halt and this had seemed to be a desperate last ditch action. What I was witnessing here was a deliberate procedure for bringing a train slowly down a steep grade. Think: ABS brakes; pulses of steam to slow the wheel rotation without having the wheel slip. I was impressed, though this is probably old news to better informed readers.

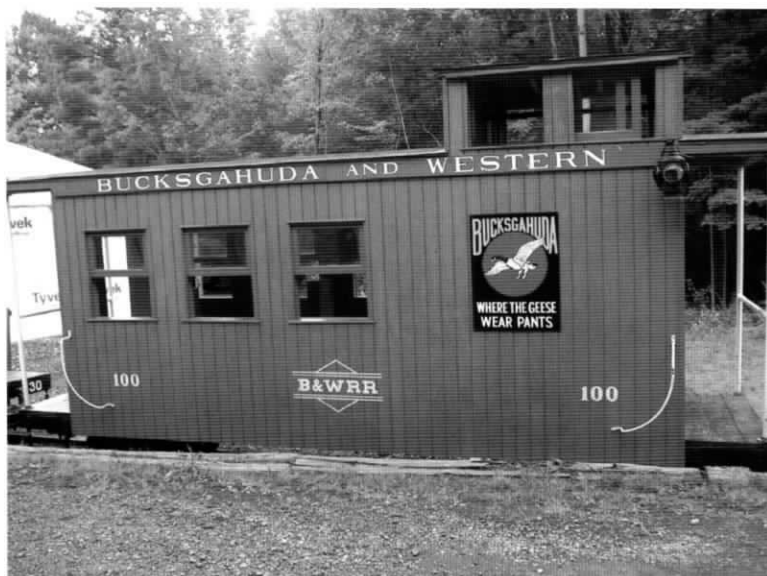
It did get me to thinking, however. In the past I haven't been much of an R/C steam train fan. My attitude has been that you're supposed to burn your fingers and get dirty controlling your locos by hand. Having seen "Otto" operate I'm wondering why we can't take advantage of the latest glitch free radio control equipment and operate the steam valve and valve gear on a locomotive over a layout with some serious grades on it. I know there are other ways of contending with grades, but I'm curious about this method. Something to do.

At the very least you should visit the Bucksgahuda & Western and see "Otto" operate for yourself. As to the name and logo, let me direct you to a newspaper article on a bulletin board on the right side wall of the main engine house. It explains everything.

There's a web site, Google: Bucksgahuda, but I don't think anything can match the experience of being there.

Thanks, Frank, for helping me find the place.





*B&W RR caboose. "Where the Geese Wear Pants".*



*A few hopper cars on a siding, waiting to be filled with loads of ballast.*



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*OTTO, the little 0-4-0 Henschel.*







## FINESCALE RAILROADER

Effective January 1, 2007 we will stop publishing **FINESCALE RAILROADER** magazine. In its place will be three softbound books: The **LOGGING, MINING & INDUSTRIAL ANNUAL**, the **NARROW GAUGE ANNUAL**, and a new third book, the **MODELERS' ANNUAL**. The **INDUSTRIAL ANNUAL** will mail about April 1, the **NARROW GAUGE ANNUAL** August 1, and the new **MODELERS' ANNUAL** December 1.

It will be a very positive evolution. The prices below include the remaining 2006 issues, all three 2007 Annuals, and postage:

### PRICING THROUGH MAY 10:

Within the U.S.: \$20.00 for the three 2006 issues  
Outside the U.S.: \$28.00 for the three 2006 issues

Within the U.S.: \$45.00 for all three 2007 Annuals. Two year total = \$65.00  
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### PRICING MAY 11 THROUGH AUGUST 10:

Within the U.S.: \$15.00 for the two 2006 issues  
Outside the U.S.: \$23.00 for the two 2006 issues

Within the U.S.: \$45.00 for all three 2007 Annuals. Two year total = \$60.00  
Outside the U.S.: \$63.00 for all three 2007 Annuals. Two year total = \$86.00

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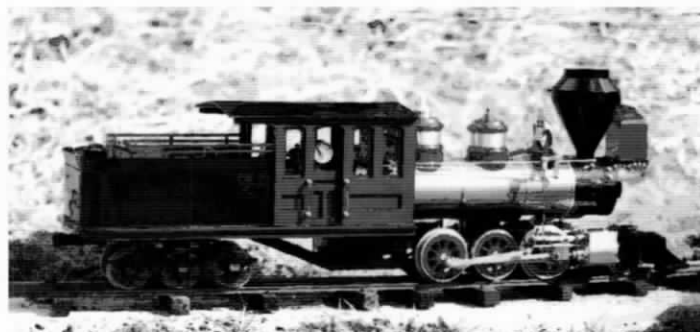
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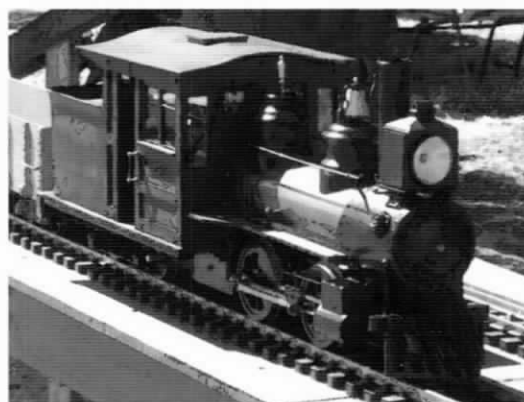
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Mason Bogie 20.3 Scale



Portland Forney 7/8 Scale

# *2006 National Summer Steamup*

by Sonny Wizelman  
photos by Mike Martin

The 10th annual National Summer Steam Up was held July 19th – 23rd. This year, as we have done for the last 4 years, the steam up was held at the Lions Gate Hotel and Convention Center in Sacramento, California. The facilities are well suited to our needs. This is a modern, air conditioned 6000 square foot plus area for our 3 portable tracks along with 2 guest tracks. In the same building we had rooms for the exhibitors and the seminars.

This year we had 106 registered steamers from 14 states, Canada and Mexico in attendance. We set up on Wednesday afternoon and were steaming by that evening. There were locomotives of all types and scales running on alcohol, butane, sterno or coal. The hall is open for running from 7 am through 1 am each day. We tear down on Sunday at noon.

Each morning we fired up the Larry Banghams' Steam Track Cleaner, that he has donated to the Summer Steam Up, and towed it around the track in a cloud of steam.

There were 10 loops available for steaming, so everyone has ample time on the tracks. Two of the loops are dual gauge to accommodate the 32mm folks. The two large double tracks have schedule boards which allowed for 1/2 hour running segments throughout the day and evening hours, but was never crowded.

There were dealers in attendance showing the latest

in locomotives, rolling stock and track systems. We conducted 7 seminars from Thursday through Saturday. The subjects included building turnouts, tuning engines, as-

sembling kits, developing and building a steam donkey and a demonstration by I-Wei Huang (AKA Crab-Fu) of his steam creations.

On Saturday we had the third annual Shay-Up. A new record of 24 was set. This was a fun time and we had a lot of laughs while the 24 engineers were trying to get all the fire breathing locos running together.

Saturday evening was the BBQ. All registered steamers and their guests get together for really good hamburgers, hot dogs and all the trimmings. This was a chance for all of us to share a meal.

We, the seven members of steam events,

LLC, are planning the 2007 event. It will be held at the Lions Gate Hotel again on July 18-22. You can find additional information and a registration form at [www.summersteamup.com](http://www.summersteamup.com). We hope you will make plans to join us next year.

These photos were taken again this year by Mike Martin. These and many other photos are posted on the various hobby web sites.

Steam Events, LLC

Bob Trabuco, Tony Dixon, Dave Cole, Clark Lord, Jim McDavid, Bill Turkel and Sonny Wizelman.



*Record breaking Shay lashup.*



*Tony Dixon tweaks his loco.*



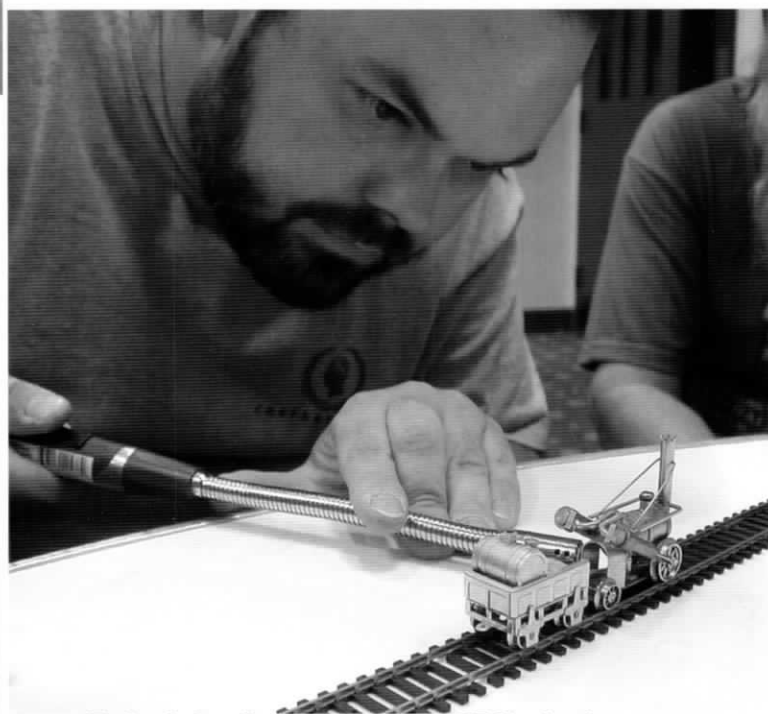
*An assortment of wheel castings.*



*Glen Ward and his Accucraft Shay.*

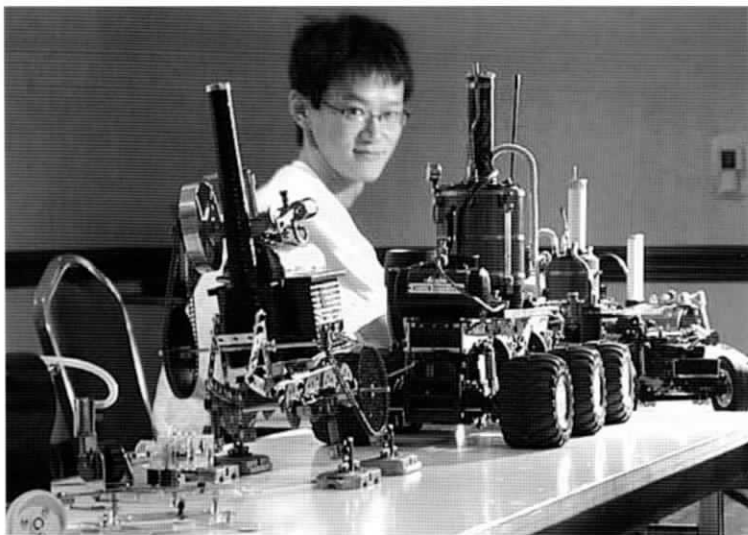


*Hans Huwyler preparing his Aster "Spam Can" for a run.*



*Chris Coley lights his micro (HO) sized steamer.*





*I-Wei Huang (aka Crab Fu) had a display of his weird and wonderful steam powered creations.*



*Bruce Sherman hides behind his Shay.*



*Eric Maschwitz setting up his steam donkey.*



*Steve Heselton (l.) and Rob Lenicheck (r.) with a doubleheader.*



*Dennis Bowie & his scratchbuilt GIMRA Project Loco.*



*John Bigelow with his micro-sized vertical boilered steamer.*





*Bill Turkel and his scratchbuilt backwoods logging loco.*



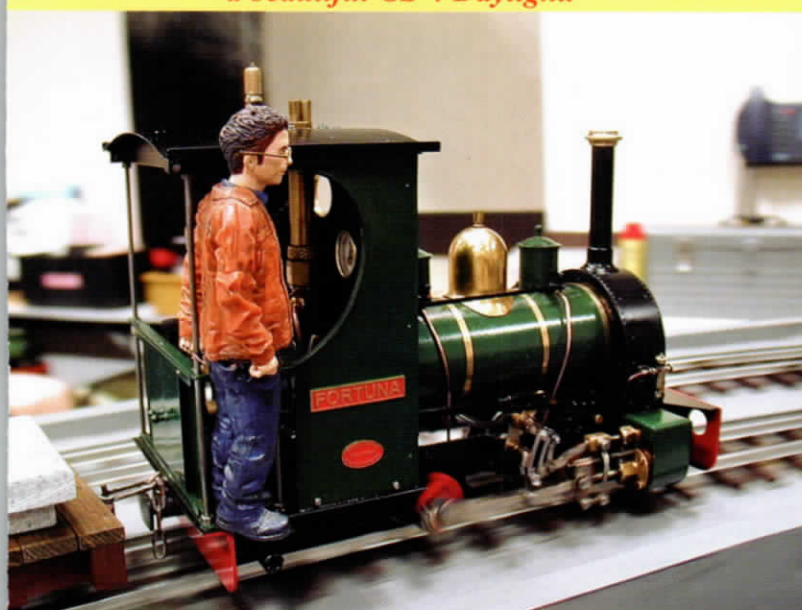
*Royce Woodbury.*



*Jim Overland (l.) and Jeff Williams (r.) with a beautiful GS-4 Daylight.*



*Pat Dixon readies her Roundhouse.*



*Unknown Gate Crasher drives away with FORTUNA.*



*Tony Dixon (l.) adds water to the tender while Jim McDavid (r.) observes.*





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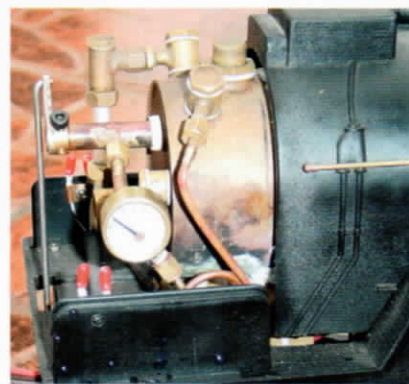


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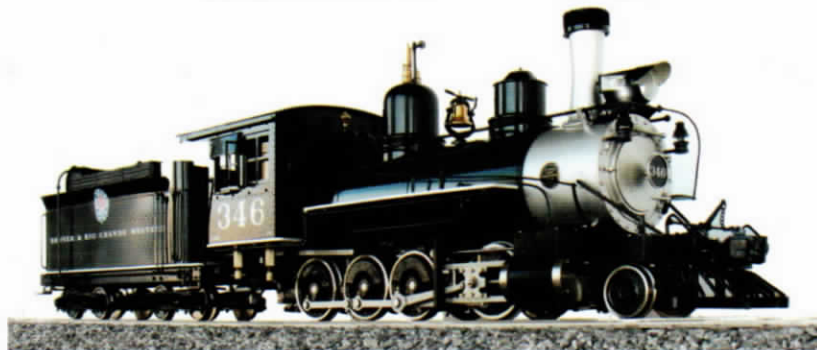
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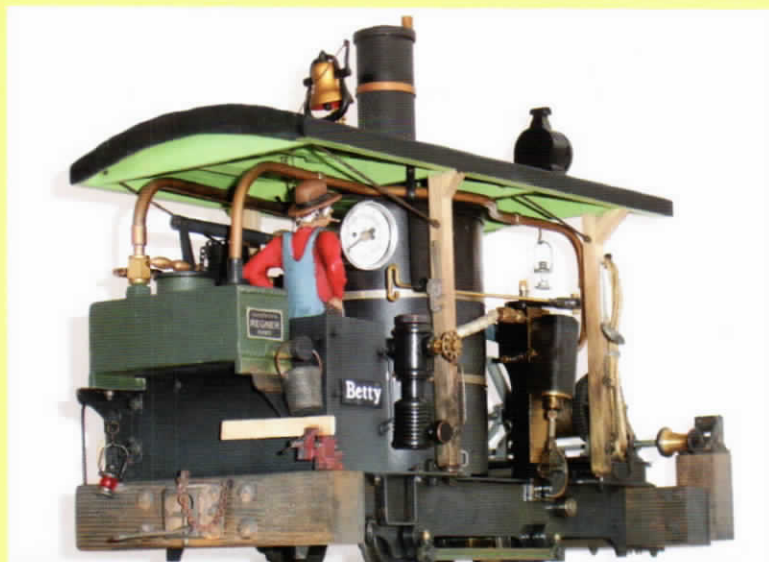
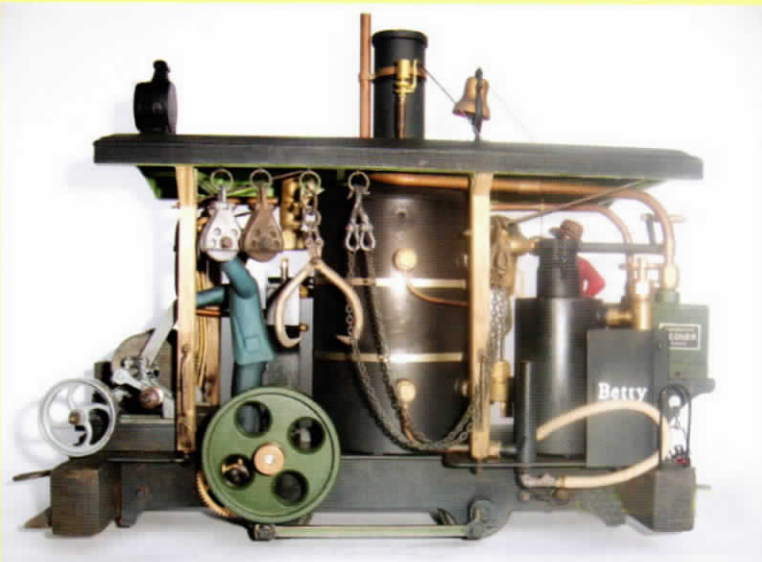
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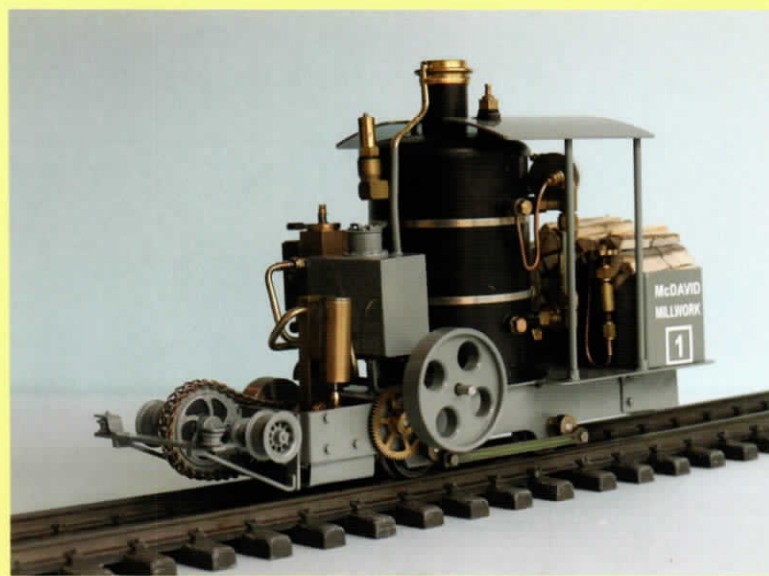
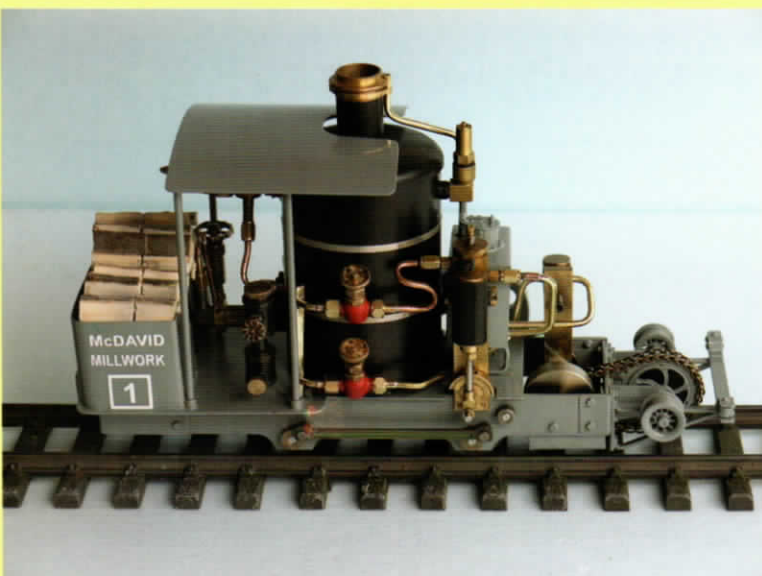
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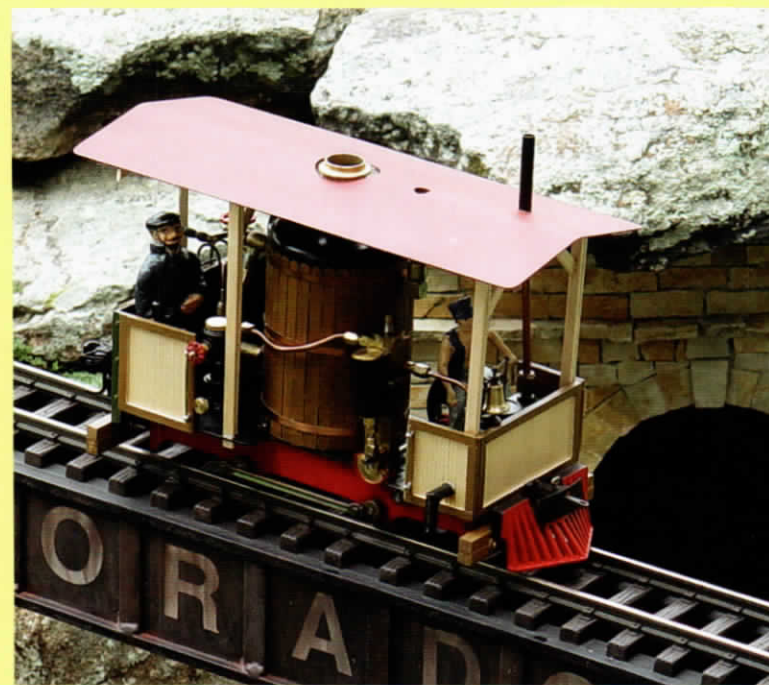




*Above: 1st Place Winner in our Willi Bash Contast, won by Jerry Sheehan of Florida.*



*2nd Place Winner in the Willi Bash Contest, submitted by Tom Bowdler of New York.*



*Third Place in our Willi Bash Contest was taken with this entry by Hung Ta of Colorado.*

## Winners of the Regner Willi Bashing Contest

### Sponsored by the Train Department and *Steam in the Garden*

The results are in, and Jerry Sheehan took the 1st prize of \$100. 2nd prize (\$50) was won by Tom Bowdler, and 3rd prize (\$25) was taken by Hung Ta. In addition to the cash prizes donated by The Train Department, *Steam in the Garden* will award a 1-year subscription (or extension) and some additional merchandise to each entry.

We appreciate all those who entered, and also our judges who took the time to evaluate all the photos sent in by contestants and render a dif-

ficult decision.

Our next competition, which will begin immediately and conclude at the end of 2007, is a Regner KONRAD Bashing Contest.

Commentary from our winners are posted below, and photos of their entries can be seen on the opposite page. We will publish photos of the runner-up entries in a future issue.



---

#### 1st Place Entry by Jerry Sheehan

When I first saw an ad in SitG for Willi and Konrad, it struck me that maybe they had "possibilities," but I couldn't decide which one I liked better. When I finally saw Harold Dunsford's stock version of Willi in person at Norm Saley's earlier this year, I knew which one I had to have. Well, here's my story about the conversion of "Willi" to "Betty".....I started out with a perfectly good little locomotive that I got from Ken Johnson and then changed just about everything.

As you know, the green condensation tank started out on the front end of the locomotive and had the steam exhaust from the cylinder plumbed directly (down) into it. The steam vent from that tank exhausted straight up in the air at the front of the locomotive. That arrangement struck me as strange in any case, but I knew I was going to have to move all of that to the back of the loco (and also delete the front vertical plate) to make room for a winch assembly installation up front. This required re-routing and re-plumbing the exhaust system as I went with ever-increasing diameter tubing to hopefully reduce the system back-pressure----which also explains the insulation I wrapped on the steam supply line to the cylinder: my attempt to assure good quality, i.e., hot, steam to compensate for any back-pressure losses.

I drilled the stock cylinder reversing lever and bolted on the clevis of a fabricated reach rod and its support. That rod ends in a handle which is close enough for the engineer to operate (I can too). I added a Regner check valve assembly, plumbed in low down on the left side of the boiler, so I can add water during the run. The hose "connecting" to the bottom of that assembly through an Ozark Miniatures elbow and check valve represents a siphon hose----and doubles as the connection to the trailing water car (does anybody besides me notice that this locomotive doesn't have a water tank?). It's probably not obvious that the very realistic-ap-

pearing hose is made from a screen enclosure rubber lock "spine", threaded down the center of a shoelace, finished off at the ends with brass rings from the beadwork rack at the local craft store. I disguised the top of the gas tank with an extension (a shortened 3/8 X 1/2 copper tube adapter) and fabricated the cover with a retention chain to hide the obvious. The "cab" sides were shortened simply because there was no way for the engineer to get into the stock cab; a fabricated step and straightened Ozark grabs and a Little Railways oilcan, in its slotted tin can holder, complete the cab part of the job. I added the taller smokestack, a piece of 3/4 inch hard copper which was a perfect slip fit over the stock stack, originally for looks, but it might also improve the boiler's steaming with a better draft over the fire. The re-routed steam vent from the condensate tank runs under the roof, over the top of the boiler and then up the front of the new stack.

I added the big pilot beams with Ozark details front and rear because you tend to bend metal or at least scratch the paint if you smack into something otherwise---and it just looks right (I'm just showin' off with the vise and red lantern on the rear one). The support timber for the Ozark fairlead on the front beam with its footboard is based on a prototype photo. I think the side rods look much better with the Trackside Details oil cups I soldered onto the ends. I added the loops and rings to hook the "hold-back" chains (hanging on the left side roof eave) onto the rear end of the loco frame when the winches are pulling.

I adapted the roof assembly from the Regner kit, but added the bolted-in brace rods, changed the shape from peaked to round and re-framed the underside supports to accommodate the (extended) safety valve vent through the coffee stir-stick sheeting and "tarpaper" roofing----the bell and headlight are add-ons of Ozark parts. The Trackside whistle on the boiler fill plug is (so I can get the roof off) a "slip-fit" part, mounted on a piece of rod soldered into the plug. The roof required an extension to the throttle valve handle out the back so it would be easier to operate while



the locomotive was under way.

The gear-driven winch is an adaptation of an Ozark 7/8 scale white metal kit---actually 2 kits because I needed a third support frame to hold the cantilevered loads of both the belt tensioner and the belt drive flywheel---that uses a real leather belt, by the way, and completely surprised me in how well it works! The belt tensioner arm, pulley and operating lever, as well as the longer pivot/drive shafts and spacers were all fabricated. The gypsy winch head at the other end of the drive shaft on the right hand side of the loco was a "slight" modification of an antique lampshade finial. The whole assembly sits on a fabricated brass sheet, bar and channel base that was necessary to get enough clearance between the belt drive flywheel and the pilot beam.

You really can't see it in the photos, but the guy up front is standing on a hinged hatch I added to allow me access to loosen a set screw and slide pieces of the drive gear train out of engagement so that the winch can be powered by the steam cylinder without the locomotive running down the track. There's also a hinged stop down in there that assures me that the gears won't slide back in mesh and cause a problem. The engineer figure, "Ben," is from Railroad Avenue (standing on a wooden crate to get his positioning in the cab a little better) and the "operating" winch guy is a "hinged" Bachmann handcar pumper I bought years ago---I just knew his flexibility would come in handy one day.

All the "stuff" on the locomotive---wrenches, water dipper cup, gypsy rope, lanterns, chains, tongs, pulleys, bucket, vise, etc., etc. was selected based on pictures I came across in my research or are things I believe loggers would logically do, but, I'll admit, that's my version of logical. All of this clutter, except the water dipper, the vise and the rope, is Ozark.

Well, there you go, Willi has turned out pretty much like what I saw in my mind's eye a few months ago and I'm really pleased with the result. Oh, by the way, "Betty" was my Mom's name. She died at the ripe old age of ninety-four about half-way through this bash. It seemed kind of fitting to name this loco "Betty."

---

### **2nd Place Entry by Tom Bowdler**

The McDavid clan arrived in the "Colonies" from Scotland sometime around 1740. Perhaps not viewed as upstanding citizens by the British, the move was probably not voluntary. Members of the clan fought against the English in the war for independence (a little revenge?) and shortly thereafter migrated south to Alabama.

One member of the clan married the daughter of James Earle, a half Scot, half Creek Indian warrior chief. James Earle and his warriors had fought for the United States in the war of 1812 and received a land grant by Congressional proclamation in Baldwin County Alabama.

James Earle McDavid, son of Joel Asphera McDavid,

left Alabama traveling west to California to seek his fortune. He built a homestead in the small hamlet of West Point in the Sierra Nevada mountains. West Point got its name as the farthest west point that Kit Carson was able to travel while scouting passes over the Sierra. High water in the confluence of the north, middle and south forks of the Mokelumne river prevented further progress.

Life in West Point agreed with the McDavids and they established a thriving farm growing Walnuts and harvesting timber. A strong market for millwork made from the latter was the wealthy families building mansions in the booming towns of Sacramento and San Francisco. On one trip to visit a good customer J.E. McDavid toured the factory of the Marschutz and Cantrell company and viewed a small steam locomotive being constructed there which had the added feature of a steam driven winch on its nose.

Retuning home he told his shop foreman of this discovery and the myriad of benefits he felt a similar addition to the little vertical boiler loko they employed around the farm could provide. A resourceful person, the shop foreman immediately began scrounging for parts and materials he could use to fulfill his employer's wishes. Since it was the off season the little locomotive was moved into the shop and the conversion was begun.

The above tale, while based on fact, is as fanciful as Herr Regner's design of the Willi vertical boiler live steam locomotive which I first saw run in the fall of 2005. I was immediately smitten and ordered one while my mental wheels were grinding out ideas for its conversion. In January 2006 at Cabin Fever I purchased a reprint of "Live Steam" magazine articles about the Falk No. 1 Locomotive, which had always intrigued me. Inquiring around for parts I was given a steam motor and other parts by Jim McDavid, in whose honor the locomotive is named and from whose actual family history the above scenario was developed. Thanks, Jim!!

The bash began with disassembly, leaving the drive train intact. With engineering skills lacking my approach is to keep a good running chassis and embellish from there. Mocking up the second steam motor and the winch mechanics I realized more room was needed inside the frame, so the hefty blocks Regner uses at the corners of the frame were replaced with external brass angle brackets attached with 2-56 screws and nuts. In the rear, lengthened brackets gave a 1 1/4 inch frame extension allowing the gas tank to be relocated aft and lower for a less obtrusive appearance. The lower edges of the side frame ends were trimmed flat, mounting pans for the winch motor and gas tank were fabricated, a rear coupler pocket was added and the frame was complete.

The winch steam motor was mounted next and plumbing began. Two globe valves obtained from Sulphur Springs were mounted to piping from a homemade brass manifold attached downstream from the stock Regner adjustable lubricator. I didn't want flexible tubing and had troubles getting the right bends from spring-type benders so I bought a nifty tubing bender made by the RC aircraft

company Dubro, which did the trick. Some of the original plumbing was used and the rest fabricated from 1/8" brass tubing. The exhausts from the steam motors enter a faux water tank made from an old Ruby side tank shortened and closed with a soldered brass end plate. Since Willi is about the sloppiest loco I have ever run, this was my attempt to clean up his act. There is a drain tube soldered to the bottom of the box allowing condensate to fall between the rails and an exhaust tube is attached to the decorative stack cap and does provide some steam plume. The Ozark water hatch furthers the illusion that this is the locomotive's water supply. The operational scenario is that the engineer can activate the appropriate valve for either locomotion or winch operation while the loko is stationary then control the speed of either with the normal steam valve in the cab while observing the water and fuel supplies. The McDavid crew takes pride in their little steed so the piping was polished instead of being painted.

Next came the floor and bodywork. The old floor was traced on brass sheet to get the contours around the motor and drive, boiler mounting holes and air supply holes in the correct places. The floor is shortened in front for the well in which the winch motor sits and extended in back to cover the frame extension. A hole was cut for the gas tank to be recessed, the wood bunker bent up and soldered in place along with brackets to hold the wood load, which consists of cut and split wood glued to a brass base. The roof is from a Ruby trimmed to clear the stack and water fill port and soldered to vertical stanchions which fit in short sections of brass tubing soldered to the floor.

The most challenging part of this bash was the winch! Included with the parts Jim gave me was the intermediate shaft support with brass bushings removed from his BAGRS variant. I trimmed the support to shape and cut it in two to mount to the front of Willi's frame using existing bolts. The spools were made from Ozark cast spoke wheels glued together with telescoping brass tubing to increase the axle size to fit in the bushings and hold the large chain sprocket. To add interest a set of Ozark 7/8" scale brake wheels were trimmed and glued to the sprocket and black paint was used to give the appearance of a spoked sprocket. Fairlead frames were bent and soldered from brass strips and attached to the bolts holding the frame corner brackets in place. The fairlead spools are trimmed and glued Ozark axle bushings. It took great care and several tries to solder the retaining bars in place without melting the white metal spools. The winch and fairlead assemblies are fully functional so my 1:20 scale crew can not only tow train cars around but also perform a variety of hauling and hoisting operations with the winch. My son made an

engineer figure from Sculpy clay.

All the assemblies were cleaned with Simple Green in warm water and rinsed thoroughly. The brass parts were scuffed with Scotch Brite pads and rinsed again. Lacking a spray booth I have to paint outdoors. The parts were hung on wires and placed adjacent to our coal stove while the paint was warmed on a nearby shelf. Two coats of Krylon primer and two coats of Krylon Smoke Gray were applied and allowed to cure for a couple of days on the mantle above the coal stove. After assembly some touch up was needed so I sprayed some paint into the can cap and applied it with a brush. Custom-made vinyl transfers from G Scale Graphics of Ft. Collins, CO were applied to honor Jim's contribution to the project and sealed with Krylon acrylic coating. Unlike most of my projects this one represents a "fresh from the shop" appearance. I'm sure as the McDavid crew utilizes their locomotive some weathering will occur, and tools and other accessories will find their way onto the loko.

This has been a very enjoyable project for me. I like developing ideas, improving skills I already have and learning new techniques to enhance my modeling. I also prefer to have a scenario for my projects that guides my thinking and gives the finished product a plausible reason for existing. This has been so much fun I just might buy a Regner Konrad to bash for next year's contest!

### 3rd Place Entry by Hung Ta

Basically, the main power frame remains the same as on the original Regner WILLI. I only changed the cosmetic look. The roof was made using scrap aircraft aluminium sheet from my company work shop at no cost. All wood panels were obtained from Michael's craft store for \$3.00. The boiler lagging and the strut roof support came from my daughter's craft sticks, which I found laying around her toy room. I guess you could say they are "ice cream sticks". The cow catcher & brass bell came from an old non functional Bachmann engine. The working headlight and hand rail stanchions were from Trackside Details and operate by 2 AA batteries.



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# *The Nuts and Bolts of Shays*

## *Cast Steel Trucks*

By Dan Rowe

The final type of truck developed was the cast steel truck. They were first produced in 1907 and were used on 6.5 percent of the total Shays built. The standard cast steel truck was first built in 1918, and of the Shays built after that date just slightly less than half were equipped with cast steel trucks. The only class of Shays to have cast steel trucks as standard equipment was the Pacific Coast Shay or 3-PC-13 in the Lima Locomotive Works engineering references. They were not only built for large Shays, the 24-2 class with 3-8x8 engines also had members with standard cast steel trucks. S/N 3111 was 2 gauge and S/N 3288 has a 3 gauge set of cast steel trucks and this one is in very good shape because after its last factory overhaul it was put on display at the Allen County Museum at Lima, Ohio where it still is today.

The truck plan for the first cast steel truck, LLW drawing card 16015, was in issue #88 with the drawing of S/N 1823. This design looks a lot like the truck in the patent drawing (893,041) of a four cylinder, four truck Shay. There were other LLW patents for a super Shay and one concept even made it through the design process. Sadly, this Shay exists only in the engineering drawings but it was to be a 200-ton four cylinder super Shay. The largest Shay ever built, S/N 2570, had a 72 inch

wheel base and was similar to the first type of cast frame.

The truck for S/N 1823 was made with not only cast steel frames but also cast steel bolsters. The cross section of the bottom bolster is shown by a dashed line in the left side view. The material specifications are not given on the drawings for the castings but they do specify foundry annealed. This was about the time the railroad industry was first experimenting with vanadium steels which required annealing and which have much greater tensile strength than other types of steel in use at that time. This would have made sense with the 200-ton super Shay but it seems like over kill for a 10-ton two cylinder Shay.

There are several designs of cast steel trucks that never made it past the drawing office, but the next one actually built was for S/N 2307. It was built for the Eastman-Gardiner & Co. in Laurel, Mississippi and left the Lima works on 6/30/1910. This locomotive had a few unusual features and was similar in appearance to S/N 3139 which was the last Shay equipped with the second style of cast steel trucks. S/N 2307 was also the first Shay to have a built up plate girder frame. The full length canopy cabs must have been a great relief from the relentless summer sun that is normal in the south.



S/N 3139 Photo courtesy Allen County Historical Society



The drawing of the second type of production cast steel truck used for both S/N 2307 and S/N 3139 is redrawn as Figure 1. There were a few more designs of cast steel trucks similar to Figure 1 that were only produced in small numbers.

The first type of cast steel frame had the right bearing box cast with the right frame. The right bearing box on the second style is a separate casting that is bolted top and bottom with vertical bolts very similar to the standard arch bar truck boxes. The left inside bearing boxes are free to move up and down and an equalizer lever is used with both early styles. The cross section through the axle reveals that the right axle bearing is nearly completely inside the plane of rotation of the large gear. This is why a simple shaft key for the large gear will not make a successful model. The first truck that I made has a very short right axle bearing. The solution of a hollow gear with a bolting flange was universal to all Shay truck designs.

The left frame of the second style of cast steel truck is all in the same plane similar to the first type of truck frame. The bottom right and left tie bars were drawn as a separate part to illustrate the difference and design changes. The left side bottom tie bar is in the same plane beneath both left bearing pedestals, but the center section angles inward to provide a separate bolting location for the bottom bolster. The outer ends have two 45 degree bends to align with the bottom cross tie bars and the diagonal brace bars.

The right side frame is a bit more complicated. The center of the frame looking from the top is straight and bolts to the bottom bolster. The frame then angles out to clear the large gear and then turns back parallel to the line shaft to support the bearing boxes. This offset to clear the gear is common on all the cast steel truck designs. The drawing of the first style in issue #88 was simplified from the original drawings. The thickness of all the vertical panels on the first style frame is only 3/8 inches. I should have left in the dashed line that runs parallel to the inside edge of the right frame which would have shown the thickness of the casting from the top.

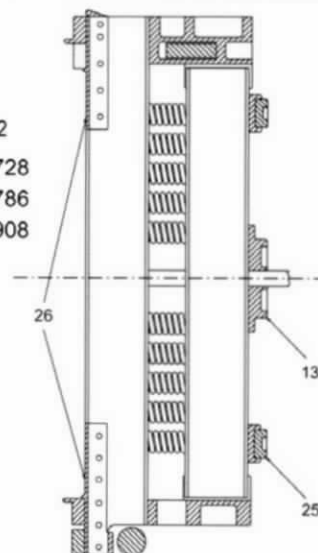
The bottom right tie bar in Figure 1 is

simply shaped like the letter C and the same double row of bolts are used to secure the bottom bolster. The bolsters are channel and plate box beams with end separator castings similar to the standard arch bar truck design. A removable piece known as the frame splice is used to fasten the top of the bottom bolster on the right side. This is a fairly complex part because the section of the frame it attaches to is angled in two planes. Removable wedges and bolts are used to lock the frame splice in place. The left side frame connection for the bottom bolster is simply a square hole that is shimmed at the top to make a tight fit.

There are two sets of top cross tie bars. The inside set supports the inside brake rigging. The outside set of top cross tie bars in Figure 1 do not match. This is the front

**Figure 1**

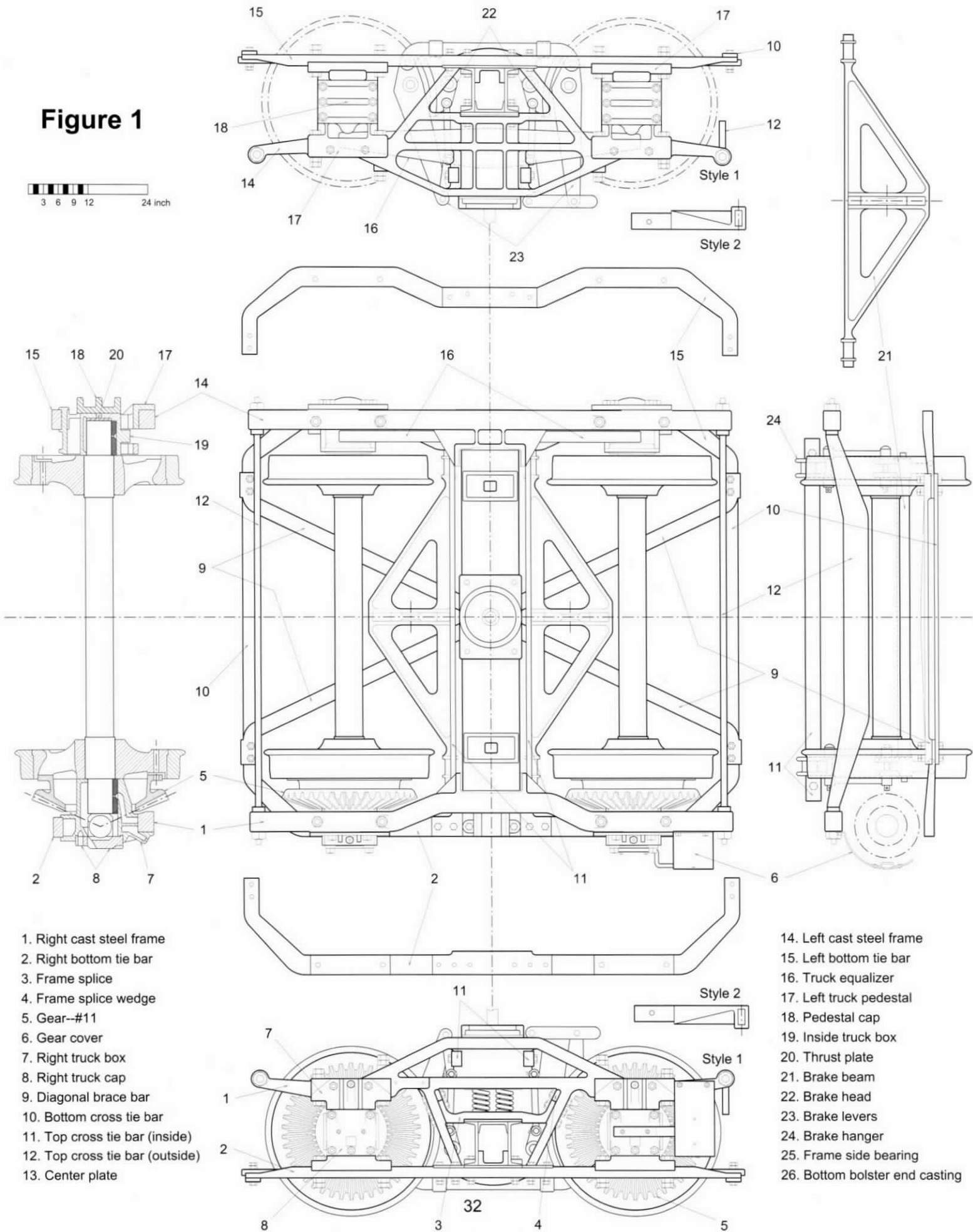
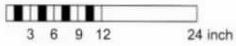
Style 1	Style 2
S/N 2307	S/N 2728
S/N 2412	S/N 2786
S/N 2428	S/N 2908
S/N 2506	
S/N 2538	
S/N 2704	
S/N 2754	
S/N 3035	
S/N 3139	



truck so the forward top cross tie bar drops down to clear the coupler pocket. The rear top cross tie bar is a simple bolted rod. The rear end of the rear truck has a drop down bar and the center truck has two of the rod cross tie bars. The style 2 frame ends use a flat bar for all four top cross tie bars. Some of the arch bar truck designs also used drop top cross tie bars for the same reason.

The final unusual feature of the second style of truck frame is that the angled members on the right side are at two different angles. I believe this was done because this frame was designed for more than one gear and extra room was needed for the range of gear choices. This truck was used for 65-3 Shays with 3-12x12 engines and 50-2 Shays with 3-11x12 engines also

# Figure 1



1. Right cast steel frame
2. Right bottom tie bar
3. Frame splice
4. Frame splice wedge
5. Gear-#11
6. Gear cover
7. Right truck box
8. Right truck cap
9. Diagonal brace bar
10. Bottom cross tie bar
11. Top cross tie bar (inside)
12. Top cross tie bar (outside)
13. Center plate

14. Left cast steel frame
15. Left bottom tie bar
16. Truck equalizer
17. Left truck pedestal
18. Pedestal cap
19. Inside truck box
20. Thrust plate
21. Brake beam
22. Brake head
23. Brake levers
24. Brake hanger
25. Frame side bearing
26. Bottom bolster end casting

for 70-3 Shays with 3-12x15 engines.

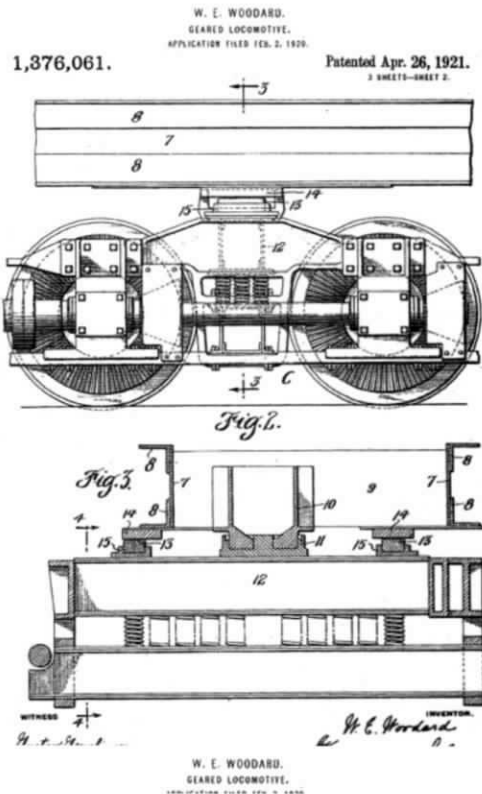
The last type of cast steel truck which became the standard type was first used on S/N 2982. This Shay was one of the few two truck large industrial Shays. This Shay had 3-13x15 cylinders which makes it a very large class B Shay indeed considering that the 3-PC-13 Shays used the very same engine bore and stroke.

S/N 2982 was listed in the 1921 catalog as a 70-2 Shay and the weight is listed as 169,000 pounds. The roster and the truck plan list S/N 2982 as a 80-2, and all the other Shays built with the same truck plan are listed as 80-2 class Shays. The catalog and advertising copy writers at the Loco Works did not always pay strict attention to the engineering facts. There are several cases where the tonnage ratings are shifted to make room for a new model.

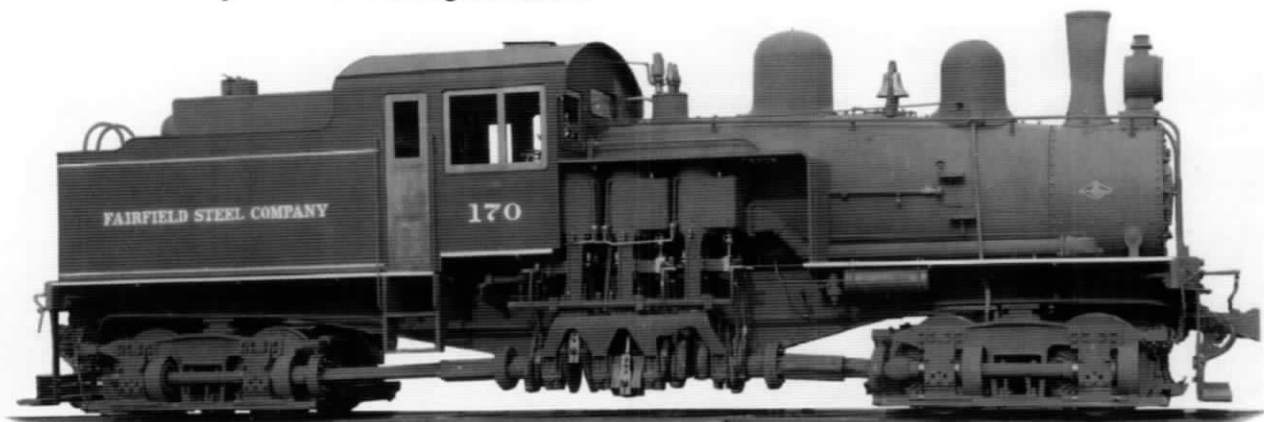
The patent drawing 1,376,061 shows an early version of the standard cast steel truck. The solid frame panels are similar to the first type of frame. The vertical bolts on the top of the right and left bearing boxes are replaced by all cross bolts. The frame splice bar is moved to the left side where it is a straight bar. The right side frame is now the one that is shimmed for a tight fit. The left bearing pedestal is redesigned for the 3-PC-13 class so both bottom tie bars are the same C shape pattern. This offset of the top and bottom mounting points of the left bearing pedestal is reminiscent of the similar offset on the very early arch bar trucks also done to match left and right part patterns.

All the cast steel truck plans I have seen have lever-equalized left bearing boxes, and

I believe that they were a common design feature of Shay cast steel trucks. The later standard frames have holes in the panels to reduce the weight. The final Shay built, S/N 3354, used a standard cast steel truck very similar to the 3-PC-13 design only larger for the larger engine.



The truck drawings were arranged in a non traditional manner. If a zerox copy is folded over a box the same size as the truck it is possible to make an actual 3-D drawing missing the bottom view. This is why the left side is upside down in the drawings.



S/N 2982 Photo courtesy Allen County Historical Society



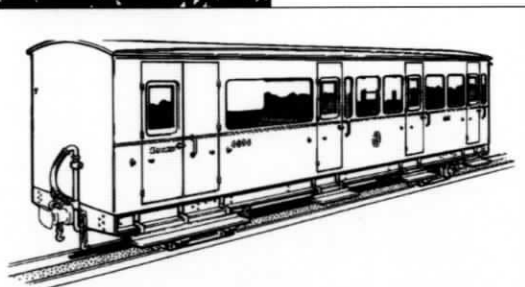
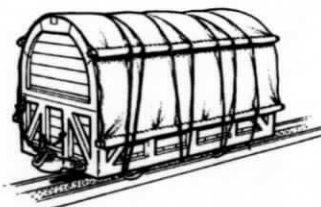
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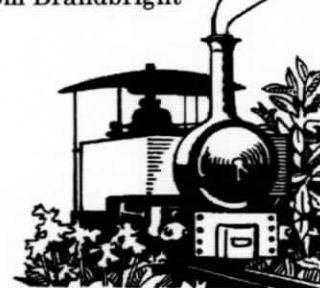
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# *The Much-Maligned Mamod SL-1*

by Jeff Young

## *Going back to our roots...*

Those buying their first live steamer today have many options to choose from, particularly the selection of reliable, low-cost, entry-level locomotives.

railway". Advertised as being a 16mm scale narrow gauge locomotive, it was more live steam toy than a scale model. The first locomotives were gauge O only



*The basic Mamod.....a popular starter loco in the early days of steam.*

Lucky folk, they are, as that always wasn't the case. Back in the early 1980s, many of us entered the wonderful world of small-scale live steam by means of the Mamod SL-1 locomotive. Mamod was founded in Birmingham, U.K. in the late 1930s and initially made model stationary live steam engines, progressing to road rollers, traction engines and roadsters over the years. In 1981, they leaped into the world of live steam locomotives in offering their "live steam model

and initially offered in a set with track and wagons, in a rather attractive (and apparently award-winning) red package.

As a concession to the safety-conscious toy market, the locomotive used those same foul-smelling solid fuel tablets as other Mamod steam engines. "Camel dung", as one veteran 16 miler once described their peculiar smell. As we soon found out, they were barely adequate at getting the safety to lift at the 10



*Mamodfest attendees, l to r: Ken Roach, Chris Saunders, Jeff Hammer, Jeff Young, Bill Shipp & Peter Foley.*  
photo by Bill Burgess

psi setting, let alone hauling a train outdoors.

Another shortcoming was that the rotary valve at the front of locomotive (which controlled both speed and direction) had two settings: "off" and "warp drive". Also, the little lever that controlled the valve got exceedingly hot and would leave nice little "branding-iron" marks on your fingers. Quirks and annoyances aside, we bought them - myself included (trading in my collection of HO "electric mice" for that wonderful red-boxed set.) It was so popular, that when Mamod finally closed down production in the late 1990s, in excess of 15,000 locomotives had been built.

Over the years, Mamod locomotive came in a number of guises (including special ones commemorating Mamod's Jubilee and the Charles/Diana royal wedding) including a very popular kit version, which wisely allowed the builder to assemble either a gauge 0 or gauge 1 version.

The shortcomings of the Mamod led to the development of a substantial industry in after-market replacement parts, including alcohol burners, safety valves with higher pressure settings, detail parts, etc. The running joke was you would spend as much on after-market items as you did on the original purchase

price in order to turn the Mamod into a docile little locomotive. My own humble example received a Sidstreet Bannerworks alcohol burner, a Rafe Shirley safety valve, a Chaney regulator, and a 16mm Association of Narrow Gauge Modelers replacement stack (back when the Association offered delightful bits and bobs for sale). Later it received a new set of machined wheels to eliminate another annoying problem - after a while, the crank pins would work loose in the wheels, making those wobbly cylinders even more wobbly than need be.

The more ambitious of us even fitted radio control the engine. Bill Shipp's locomotive was one of the first examples of this I saw. As well as having a home made gas firing system, Bill also fitted radio control to the shrill whistle, providing endless hours of amusement for children at local train shows!

Those who did not have the patience to fit these and other improvements tossed the little fire-beasts in the back of the workshop in disgust, either giving up on live steam entirely or buying a more expensive and elaborate locomotive. Those who were lucky enough to be around when these Mamods were being cast aside got a live steam locomotive at a very, very good price. They could be had at such a good price, in



fact, that they became popular fodder for kit bashing projects, with many fine creations appearing in this magazine over the years. I was fortunate enough to acquire one of these locomotives as my second Mamod, which became an approximation of a Welsh quarry engine.

"Locomotive" is perhaps not an accurate description as I received it - just a box full of parts in varying states of decay. Over time, I ended up replacing everything except the frames, smoke box casting and side tanks in order to get a functioning beast. With all the new replacement bits (including a new boiler by Mike Chaney), it became, (as many Mamods did) the classic "grandfather's axe" joke. One such example, owned locally by Ken Roach, has been patched up, repaired, and refitted so many times it has been appropriately named "Lazarus" for its uncanny ability to rise from the dead!

Speaking of local Mamods, our group of small scale live steamers always pay homage to our humble beginnings each year with our annual "Mamodfest". The little locomotives are hauled out of the display cupboard, dusted off and given a run or two for good measure. For those of you who wish to experience the fun of owning a Mamod locomotive, they appear on eBay frequently, albeit some of the rarer examples seem to have been elevated to "collector" prices!

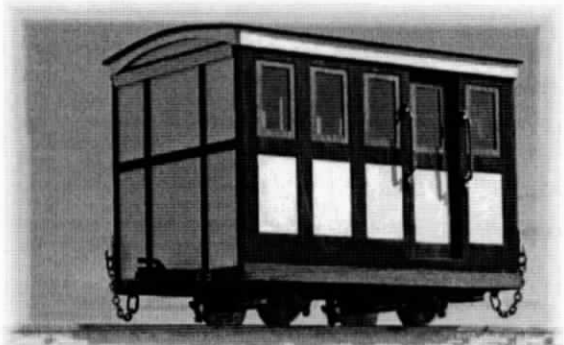
IP Engineering and PPS Steam Models in the UK still supply various aftermarket items for the original Mamod locomotive. Of course, I must point out that the Mamod locomotive does live on today, reincarnated as the much-improved IP Engineering "Jane" as well as a newer version of the diminutive little 0-4-0 locomotive sold under the Mamod brand, that bears some resemblance to its original ancestor.



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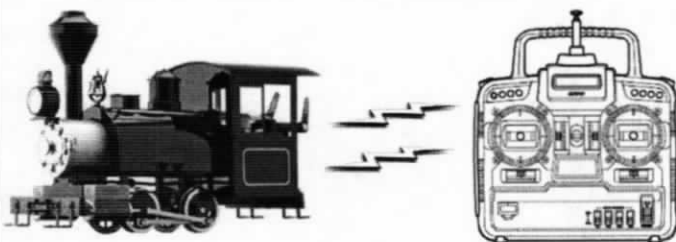
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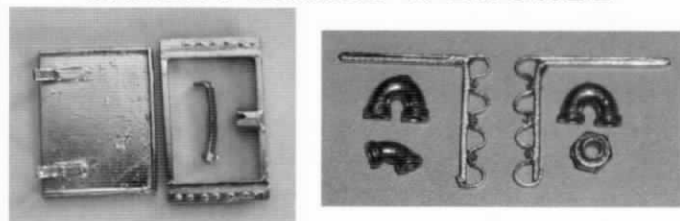
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# Got Charcoal?

by John Fuller

Like many live steamers I sat by and watched, asked a few questions and wished I had, and knew how to run, a coal fired live steamer. It seems they are becoming more popular and there are a few people making them for public sale. You know what they cost? Ouch! You continue on anyway and start asking questions.

Where do you get your coal and what is the best kind? Wow, that was a loaded question. Learned more than I wanted to know and forgot most of it by now! Then I asked why not charcoal briquettes to get the fire started? The smell, the chemicals and the mess of breaking them into little pieces, were just some of the answers. So off I went with a computer, the yellow pages and a phone to find the elusive plain old Charcoal, which I have never seen for sale in any store. A few hours, a bunch of phone calls and a whole lot of surfing and all I had was sources for wood to make my burgers taste like different trees!!!

If I learned anything from my Dad, it was that you can do anything you want with a little knowledge, a lot of hard work and a few brain cells. So I decided to make my own coal fired boiler and my own Charcoal. I'll just buy the coal! The boiler story is for another time!!

So I spent a bunch of time on the Internet reading, learning and taking notes.

Now, there are a whole bunch of people out there making charcoal for any number of reasons. Making their own fireworks, grilling food without chemicals and heating their homes were just some of the reasons.

What I learned, in a nut shell, was that charcoal is basically wood that is cooked in the absence of flame or oxygen. Maybe not a technical description, but it's the basic idea. Most of these people are making large quantities of charcoal using 55 and 35 gallon drums. Now in my city, which has more laws than Diamondhead has burn marks on the rug, you can not have an open flame in your yard. However, you can have a bar-b-que! Here is where the brain cells come into play.

Let's get started.

Here is your parts list:

- A flying saucer grill, as seen here.
- A one gallon paint can.
- A bag of cheap charcoal briquettes.
- A bottle of cheap briquette lighter fluid.
- A 5/16" drill bit and drill.
- A large flat screw driver or paint can opening tool.
- A large zip lock bag or something to put your charcoal in.

Get yourself one of those small bar-b-que grills that looks like a flying saucer, and a one gallon paint can. I'll explain the burned handle on the grill later!

I already had the grill, which I never used, and I bought a paint can from the local Lowes for a couple of bucks. If you only plan to use the grill for making charcoal, then I would drill a couple of extra holes in the bottom, below the lower grill, so that more air gets up and through the briquettes. I think my holes were 1" or 1 1/4", but even some 1/2" holes would help. This will make the briquettes burn hotter and faster. I was able to make my charcoal without drilling the holes the first couple of times, but I thought it worked better with the holes for extra air flow.

Now the grill is ready, so let's prep the paint can. As you can see I drilled a bunch of 5/16" holes in the lid of the can. This will let the moisture and gases from the wood escape and be burned up in the grill. That's all you need for the can.

For wood I just used branches that I collected from the yard after each storm. I found that for Gauge 1 engines your best charcoal size is made from sticks 1/8" to 5/8" in diameter. However, the larger the stick the more heat and time it takes to convert it into charcoal. My best results were with the sizes mentioned above. You need to cut or break each stick into a length that will fit inside the can. I used a pair of tree trimmers to cut up my sticks.



*Grill with extra vent holes in bottom.*



*Paint can in grill surrounded by briquettes.*



*Sticks collected from yard debris and cut to size.*



*Sticks packed in can and ready to convert to charcoal.*



*Thor stands guard over process!*



*Finished product, all broken up and ready to use.*



You can pack the sticks into the can about as tight as you want. It didn't seem to matter in my tests. Your one gallon can of packed sticks will yield about 1/2 a gallon of charcoal. Once the sticks are in the can you can put the lid back on and lightly secure the top. There is no need to pound the lid on since it doesn't have to be water tight, just snug. You will be taking the lid on and off a bunch of times and the tighter it is, the more bent up it will get in the process.

### ***Let's bake some sticks!***

Place your flying saucer in a safe place!!! You want to know why the handle is burnt on mine? Because this baby shoots out some serious flames!! This is your WARNING.....do not attempt to make charcoal near or under anything that burns!! A strong wind could blow the flames to the side, so keep it well clear of everything. On the cement in the middle of the driveway is the best. I can not be responsible if you burn your garage down, light your hair on fire or burn off anything else you leave sticking out! YOU are playing with fire and only YOU are responsible!! (Not recommended for use in a nudist colony.)

The bar-b-que should be on a non-flammable surface with 3 feet of clearance on each side and nothing above it. I have seen flames come out the sides up to two feet above the grill when the conversion process is in full swing. The grill vent holes on the sides should be all the way open and the vent holes on top of the lid should be open as well.

You will not need the upper grill rack. Set your gallon can of sticks up-side-down on the lower grill rack where the charcoal briquettes would go. Then pour your briquettes around the can until they are 3-4 layers (briquettes) high. Give the briquettes a good soaking of lighter fluid. You want to make sure that the briquettes light and burn properly. Make sure the vent holes on the sides are not covered by briquettes. Stand back and light her up!!

After about a minute or two you can place the lid back on the grill. The lid should sit on top of the can and leave a 1/2" - 3/4" gap all the way around because the paint can is taller than the space inside the grill. You want to put the lid on before the fire goes out because you want to start heating up the can and hold some of that heat in like an oven.

Cooking times vary and you are just going to have to wait for the thing to finish and cool down. At some point in the process the flames will start flowing out the sides and up around the lid. This is when you know your sticks are being converted into charcoal.

The heat has risen so high in the can that all the chemicals and water in the wood are being evaporated and pushed out the holes in the bottom of the paint can. These gases are drafted up through the briquettes where they are ignited and you get a nice fire going! This is why my handle is almost burnt off. Note that the lid is still on!!

This process is best started at night so that you have a cooled down can of charcoal in the morning. If you are like me and can't wait, you can make a batch in the morning and let it cook while working in the yard. Then you make another batch for the over night cook out. Two batches in one day. There were two times that my sticks were not converted to charcoal. In both cases it appeared to be because I did not put enough briquettes around the can so the fire did not get hot enough for long enough.

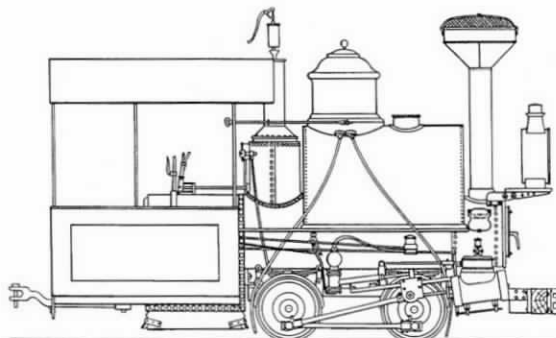
### ***Burn baby burn!!!***

Once everything has cooled down, remove the can from the grill and pry off the top. You should have a can full of nice charcoal sticks! At this point I dump the charcoal sticks onto some newspaper and then break them into manageable chunks. I found that a one gallon zip lock bag is good for storage to keep them dry until I'm ready to soak and use.

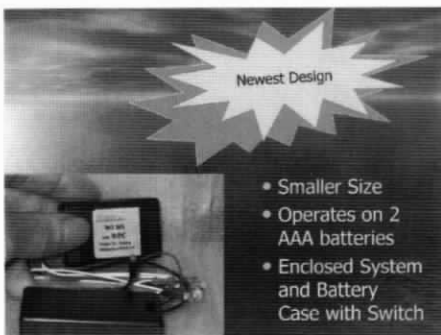
You're dealing with fire and a lot of heat here. Please be careful and take care when making your charcoal. In my case, I have a 190 pound security guard that keeps everyone back!

If you have any questions I invite you to my web site where you can contact me. Take care in making your charcoal and I hope to see you at a steamup this year.

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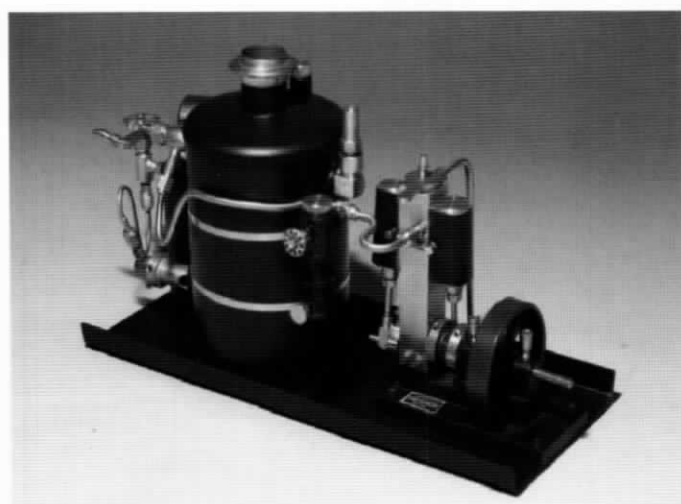
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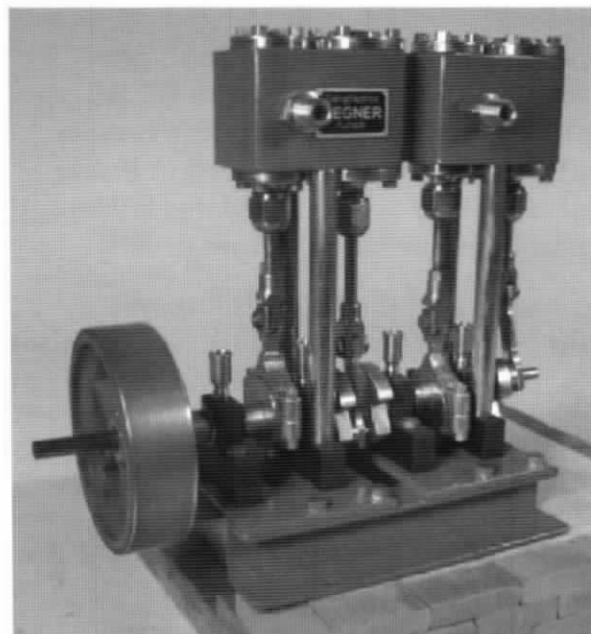
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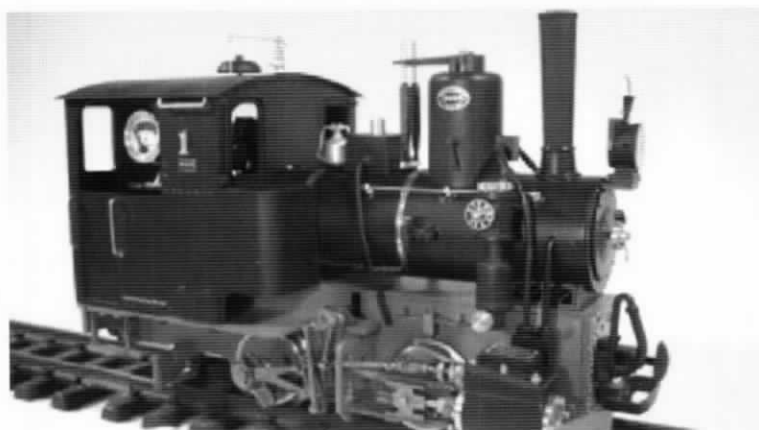


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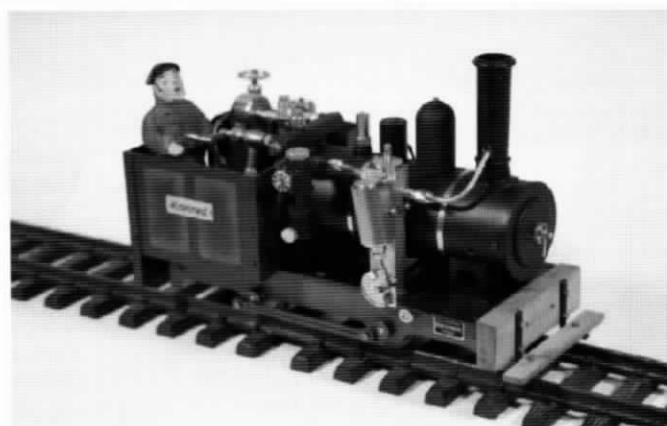


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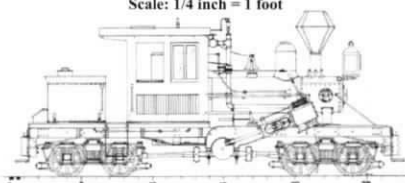
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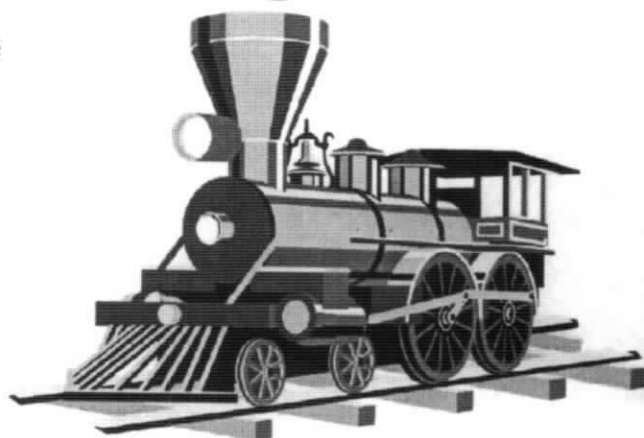
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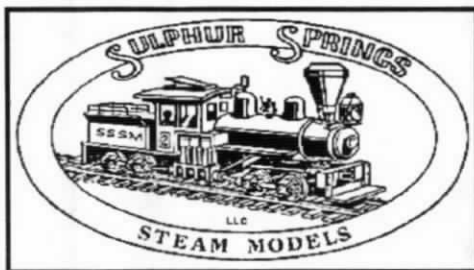
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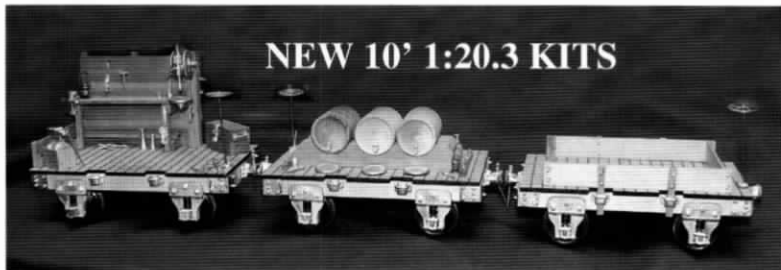
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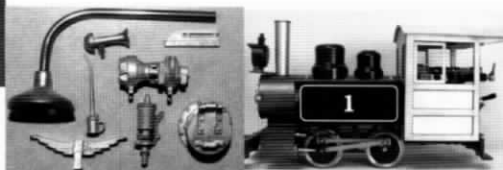
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## END OF THE LINE

The Willi Bashing Contest is over. We want to thank all those who entered, our unbiased panel of judges, and we especially want to thank **Ken Johnson at The Train Department** for sponsoring this contest. The results can be found inside this issue. Take a close look at the photos of the winners and marvel at the imagination and fine workmanship exhibited!

In future issues, as space permits, we will show photos of the Honorable Mention entries.

In addition to the cash awards, all entries will receive a 1-year subscription to *Steam in the Garden* and one of the really nifty piezo igniters we discovered last year.

### New Contest for 2007

The Willi contest was so well received that we are going to do it again for 2007, but this time the subject will be the Regner KON-

RAD. The Train Department will sponsor this contest again, and rules & prizes will remain the same as they were before.

Just to refresh your memory, 1st prize wins \$100, 2nd prize wins \$50 and 3rd prize wins \$25. The only rules are that you must start with a stock Regner KONRAD. Then let your imagination run amok! Send us a written description of your creation and as many good photos as necessary to show off your work. Digital high resolution photos are best, but glossy prints or 35mm slides are acceptable. The contest ends December 31, 2007.

Next issue will be our Diamondhead 2007 report....it was a wonderful steamup and we look forward to filling several pages with photos and text devoted to the event.

Happy Steaming!

*Ron*

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A few "Golden Arrow" kits are still available (as applied to the Southern locomotive pictured on the left). These kits are only sold as a separate option and can be applied to the Southern and BR version. Call for more details.

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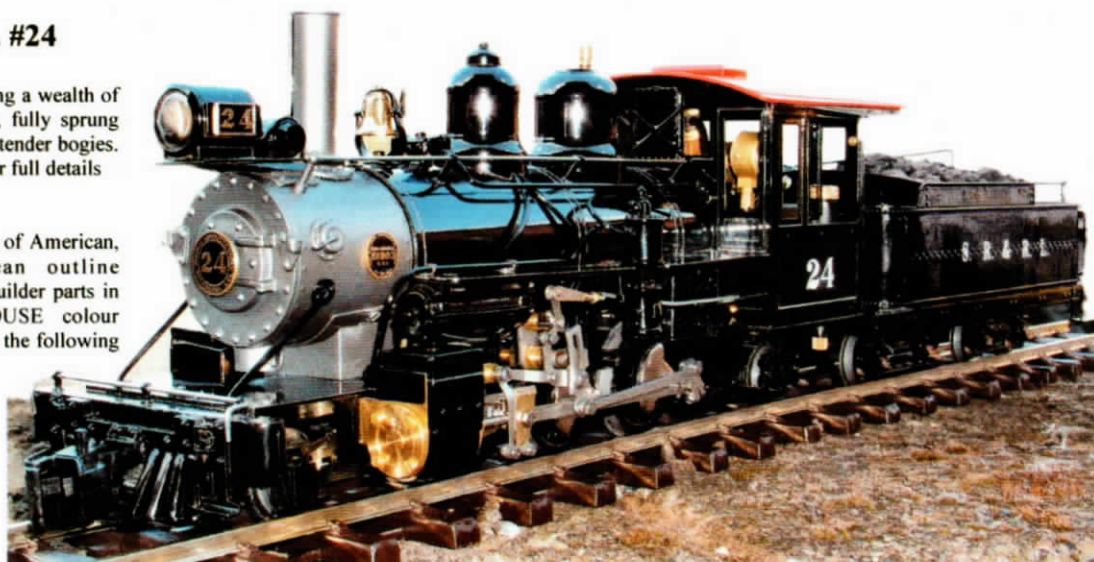
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*Dennis Tigelman (l.) and Tom Myers (r.) ponder the merits of a Regner WILLI at the 2007 Diamondhead Steamup.  
 photo by Marie Brown*