



STACK TALK

APRIL 2016

The Official News Letter of the Adobe Mountain Railroad
Phoenix Arizona, Operated by the Maricopa Live Steamers
Railroad Heritage Preservation Society,

UP-COMING MEETS

2016 FALL MEET NOV. 3, 4, 5, 6

April showers bring May flowers....hey, wait a minute, we haven't had any April showers!!! Temperatures are starting to rise. The brush in the park is already drying out. Please be extra vigilant with open flames, and use a spark arrestor if you are using solid fuels. Please remember to wear a hat and sunscreen, and drink lots of water when you are out on the rails.



Thank you to everyone who pitched in for the spring meet, from set up to clean up, and everywhere in between. Although our attendance was down a bit, it was still a successful and enjoyable weekend. We got great feedback on the condition of the track and the park. Our visitors appreciated the efforts taken by everyone to make them feel welcome. I saw some trains I hadn't seen before, so that was exciting. I saw many people spending most of the day putting miles on their trains. It seemed to me that we had more steamers than previously.

Please make sure to keep an eye on your belongings. We don't have the most secure of fences, it doesn't take long for someone to come in from 43rd Ave, grab something, and disappear. Also, keep in mind that we get lots of visitors, and sometimes they don't read the signs that say "members only beyond this point". Unfortunately, this is a sign of the time we live in.

We have 5 more Sundays for public runs. Remember that mother's day (May 8th) is our last day of rides this season. Engineer cards will expire at the end of May. Our part time park hosts Dave and Belinda have already headed off to cooler places, and more are leaving us soon for the summer. We wish them safe travels, and hope they come back soon.

Terry Liesegang took these pictures at Cobb Canyon. Everyone should be watchful of our desert critters. Be sure your hands and feet are clear of brush and rocks that could be hiding snakes and scorpions.



SPRING MEET PICTURES



SPRING MEET 2016



STEAM LOCOMOTIVES

VALVE GEAR

Hello again, for the next few months (maybe more than that!), we're going to explore the world of valve gear. From the very early days to the present, the admission, use and exhaust of the steam in a cylinder has been the subject of a vast amount of work and research by engineers and laymen in every corner of the world. Their efforts have always been directed toward achieving the most power for a given amount of steam available to the cylinder.

With that in mind let's take a look at how the endeavor began and progressed. In order to gain an insight into the mysteries about to be investigated, it will be handy to have some mechanism to view working drawings of the various aspects. Thanks to the computer age, we can pull up the following site, pick our gear, and with a few keystrokes, have a running example to monkey with!! This is the work of Mr. Charlie Dockstader, an erstwhile live steamer and computer wizard. Having had the privilege to discuss the work with him, it soon became apparent that he was a most accomplished master of valve gear. Unfortunately Charlie died several years ago, but his work lives on here.

<http://www.billp.org/Dockstader/ValveGear.html>

The following has been taken from the 5AT site (a proposed new locomotive) which explains things much better than my attempt:

Valve Gear

"Valve gear" is the mechanism used to move the valve system that opens and closes the inlet and exhaust ports that let steam into and out of a locomotive's cylinders.

There are many different designs of valve gear, including the following more commonly used types:

- Stephenson's valve gear was not invented by George Stephenson but by two of Robert Stephenson's employees, William Howe and William Williams (see <http://www.timewarp.demon.co.uk/ned/howebiog.html>). It was first applied by Robert Stephenson & Sons in 1842 and took its name from the company and not the man. Stephenson's valve gear was extensively used worldwide throughout the 19th century and through the first half of the 20th Century on Great Western Railway 2-cylinder locomotives. It is normally driven from "eccentrics" mounted on one of the drive axles and located inside the loco's frames. One advantage of Stephenson's valve gear is its variable lead which reduces at longer cut-offs and vice versa. See Wikipedia article for more details.
- Walschaerts (no apostrophe) valve gear invented by Belgian railway engineer Egide Walschaerts in 1844, gained near-universal acceptance in the early 20th century. It is commonly externally mounted and driven by an eccentric crank mounted on the end of the locomotive crank-pin. Walschaerts valve gear gives constant lead, though this is true only in linear terms - see discussion below. See Wikipedia article for more details of the valve gear and an excellent animation.
- Baker and Southern valve gear are US designs based on Walschaerts principles, but using a complex arrangement of levers and rocking shafts to replace the Walschaerts expansion link.
- Caprotti valve gear invented by Arturo Caprotti, an Italian engineer, and gained some popularity in mid-20th century European locomotive designs. Caprotti valve gear uses a rotary-drive from a gearbox mounted at the end of an eccentric crank on the end of the locomotive crank-pin. (See Wikipedia article for more information).

Our work is going to center on three types of valves, being the slide, piston and poppet (Lentz). We're also going to limit the types of gear to Stephenson, Walschaerts, and Baker. Depending on interest, we may take a peek at the cam driven gears for poppet valves.

Another extract from the 5AT site:

Valve Events

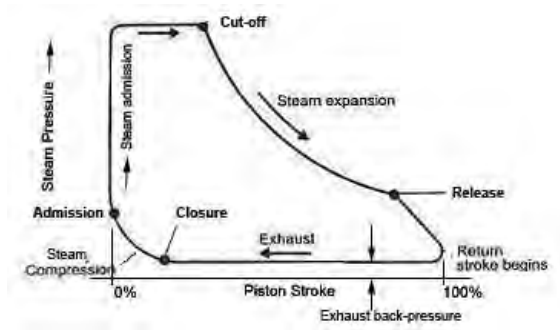
Valve Events may be defined as the four defining points in the cylinder power cycle - viz:

1. **Admission** when the port opens allowing "live" (high pressure) steam from the steam chest to be admitted into the cylinder;
2. **Cut-off** when the valve closes the port, cutting off the steam supply to the cylinder;
3. **Release** when the valve opens the port allowing the expanded steam to be released through the exhaust passages and chimney (or to the "receiver" in the case of steam flow from high to low pressure cylinder in a compound locomotive); and
4. **Closure** when the valve closes the port to prevent further release of exhaust steam.

These four points, in turn, define the four intervening periods as shown on the idealized Indicator Diagram (below) - viz:

1. **Steam admission** during which period the steam pressure increases as it enters the cylinder and drives the piston;
2. **Steam expansion** during which period, the steam expands inside the cylinder and drives the piston;
3. **Steam exhaust** during which period the piston drives the steam out of the cylinder at a near-constant back-pressure;
4. **Steam compression** during which period the steam remaining in the cylinder after the exhaust valve closes is compressed by the piston as it approaches the end of its stroke.

The timing of each valve event can be defined either by the percentage of piston travel or by the crank rotation angle at which they occur.



Here is a diagram of the porting arrangement for the slide valve:

and this is the porting arrangement for the piston valve:

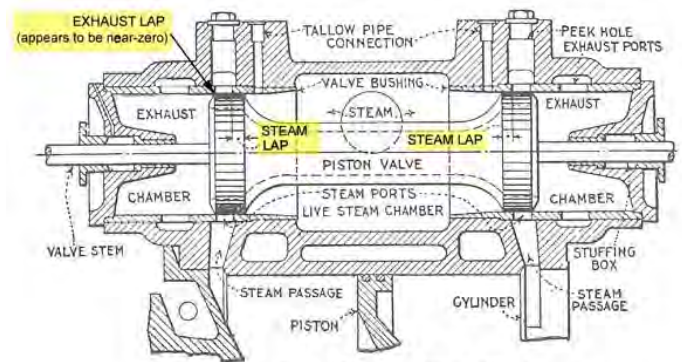
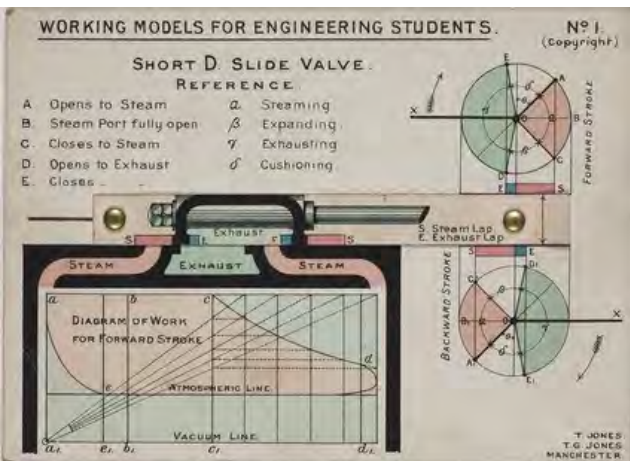


FIG. 27.—Piston Valve in Steam Chest. Section through cylinder and steam chest with the valve in mid-position.

Enough for this time, when considering all that needs to be reviewed before continuing. Please take the time to investigate and play with Charlie's computer program, you will find it fascinating, albeit, a bit frustrating getting the hang of how it works. Your efforts will be repaid with a clearer understanding of all of the nuances in the world of valve gear. It continues to provide me with an almost endless source of learning.

Take care,
Dave Griner



The Railroad

Grade Crossings

There is an inevitable reality when it comes to building a road network in this country. Eventually, you'll need to cross over another piece of infrastructure, one that has equipment on it traveling at speeds often in excess of 40 mph, and takes more than a substantial amount of time and length to come to a complete stop. It often has behind it a significant amount a weight, tens of thousands of tons, with enough force to completely destroy anything in its' path. It's loud, it has the roar of a thousand lions blasting at significant intervals, yet it still can be completely invisible to the inattentive. More common than should be thought, a dangerous mixture of ignorance, indifference, distraction and impatience leads to a disaster; trains do not kill people, complacency and ignorance does.

For decades, improvements in safety standards have reduced the number of death and injuries related to the railroad.



These advancements have been quite visible over the years, from the switch of link and pin couplers to the standard AAR knuckle couplers, to the creation of cab controlled brakes, to the improvements in rail traffic control. These all had lead to a significant drop in railroad accidents.

However, one piece of safety equipment that has done more for safety than anything else, is the modern grade crossing.

Today, many railroad crossings, especially those in metro areas, have a mixture of warnings and alarms to notify drivers of an approaching train, This type of crossing is known as an active crossing. Active crossings include crossbuck signs, flashing lights, an alarm bell, and gate arms blocking the right side of the road. Along with that, unless the crossing is in a “quiet zone” (A crossing in a

residential area where engineers are instructed not to blow their horns unless necessary.), the train will blow its' horn in succession, and with train horns ranging in about the 140-150 decibel range, it's very loud. However, despite all these safety devices, we still see grade crossing accidents all the time, either on the news, or on the internet.

In the United States, the only requirement is that crossings only have crossbucks, this is known as a passive crossing. However, by 2020, all passive crossings must have at least a yield sign or a stop sign to accompany the crossbucks. A stop sign is irrelevant, however, to an inattentive and complacent driver. It is not uncommon for our daily commutes to take us over at least one train track, making us pass grade crossings multiple times every week. This routine, as any routine does, leads us to a state

of complacency. When we are complacent to our surroundings, we downplay the dangers around us. Take for instance the case of an Indiana woman leaving a parking lot in her van with her two children. Seeing the eastbound train approaching, she raced down the parking lot, to the passive crossing, so she could beat it. She was so



intent on beating the train, that she never saw the westbound train coming from the opposite direction. The train had won. Her comfort with the surroundings, her routine activity of crossing tracks, had diminished the clear and present danger around her. The price she paid was with her life.

In an article written by Newsweek a year ago, they asked the question “Are railroads dangerous?”. In the article they cite the then-recent crash and subsequent fire aboard a New York metro train and a SUV that killed six and injured fifteen. The SUV had stalled on the railroad tracks. These dangers related to these accidents is not isolated to the occupants of the vehicle, but instead also threaten

the well-being of the crew and passengers who rely on the railroad. Far too often it seems like we hear of a derailment or an explosion that has killed, not only those in the car, but also those on the train. The damage is not limited to physical pain, but also emotional pain. Engineers and conductors sit in the cab, powerless to stop the train, and see the life of another person taken. Eventually, sooner or later, a crew must witness one of these accidents.

Kim Davids, a railroad conductor for 39 years, recently talked to Popular Mechanics about dealing with train related deaths. Kim said the he has personally witnessed 16 grade crossing incidents. “The problem is that they keep coming back in vivid detail.” he said. The problem however does not stop with Kim Davids. Rail accidents are on the rise, and those in the front row are noticing it. After years of a down trend in pedestrian and car related incidents, it is back on the rise, a 14% increase in 2013. Some have contributed this increase to the number of distractions



now before us. The use of cell phones as the cause of distracted drivers and pedestrian not noticing, or wrongly ignoring a train has been noticed: either because they are texting, talking, or listening to music. In a recent report by a psychologist at the University of Denver, almost half of railroad employees will

at one point be involved in a grade crossing collision. Of that half, 12% will experience post traumatic stress disorder, or PTSD. The situation involving such accidents are so traumatic in fact, that more often than not railroad employees will take leaves of absences, experience phantom pain, and leave the industry. Starting in 2008, because of the Railroad Safety Improvement Act, railroads are now required to offer psychological assistance and adequate time off.

The problems, however, also do not stop with emotional pain. One of the more obvious effects of a grade crossing incident is the damage to property and the

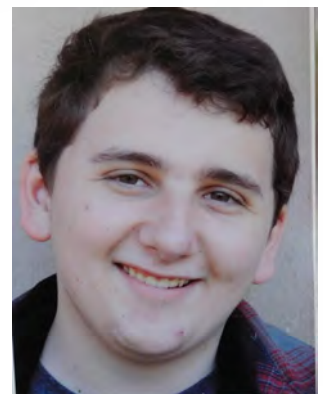
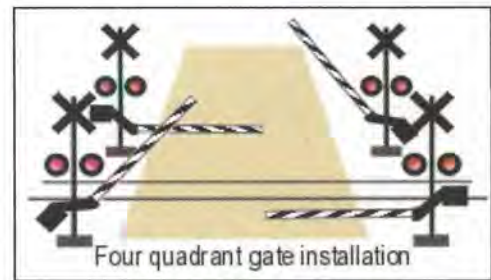
surrounding environment. Accidents that lead to derailments usually entail evacuation of parts, or the entirety of surrounding towns, due to the damage or puncture of cars carrying hazardous material. The damage to the environment, property, and loss in productivity usually comes out to millions of dollars, depending on the accident.

So, the solution. What can we do to prevent the personal, mental, and physical loss due to these types of accidents? There are areas where we can improve. For instance, instead of the minimum protection level for crossings being only a sign, let us instead make the minimum protection an active crossing, with at least bells and lights, crossing gates, and no silent crossings. There is also more we can do to improve the active crossings we see in metro areas. Instead of just having two gates, one on each side of the road, we could have four gates, two on each side, effectively blocking the crossing making it impossible to bypass the gates. New technology, such as radar detection allows for crossings to become smart crossings, opening up the gates if it detects a vehicle in between the gates.

Finally, more time and effort could be granted for teaching the public about rail safety.

Operation lifesaver started their massive “See

tracks, think train.” Campaign two years ago with a volunteer force of 1500, half of which are retired railroad employees, among those is Kim Davids, who is the state coordinator for Idaho. The campaign stresses the need for the public to always be careful around tracks; see tracks, think train. According to Operation Lifesaver and the FRA, every three hours a person or a car is struck by a train. Despite that, the message seems to be working, in 2015 a drop in railroad crossing accidents was reported. Progress is being made, however, there is always room for improvement. So I leave you with this. Be attentive, be alert, be patient, and be smart.



GABE ZORBAS

TIME LOG HOURS

The hours shown are from 2-28-16 thru 3-28-16. Where entries were incomplete, it was not possible to determine the hours worked.

Donna Holm	46 hrs. / Painting/ Public runs/ lights
Bob Douglas	169.5 hrs. / Track/ Treasurer duties/Meet
Joe Fego	23.5 hrs. / Track / Equipment maintenance /weeds /sawmill
Perry McCully	40.5 hrs. / Trash disposal /lights /Train rides /maintenance /track
Pete Pennarts	72 hrs. / Facilities maintenance
Ed Houk	29 hrs. / Public Run crew /track
Linda Houk	15 hrs. / Club house cleaning/ Meet
Fred Greenwald	56.25 hrs. / Equipment maintenance/ Inspections
Nicholas Connelly	4 hrs. / Public run crews
Dave Griner	22 hrs. / sawmill/weeds /Equipment maintenance
Jerry Grundy	16.25 hrs. / Dispatcher/Gift Shop
Chuck Holmes	9.5hrs. / Maintenance
Myrna Brooks	26.5hrs. / Maintenance
Ray Hughes	35.5hrs. / Track work
Charlotte Hughes	37.5hrs. / Track work
Jim Conlon	3hrs. / Track work/Maintenance
Larry Messing	9hrs. /Public runs
Sandra Grundy	11.5hrs. Gift Shop
Bob Alkire	18hrs. / Sawmill
Cliff Fought	44hrs. Misc.
Fran Neuer	7.5hrs. / Track
Ben Neuer	24.75hrs. / Track
Scotty Brooks	17.5hrs. / Track / Equipment Insp.
Dennis Beatty	6hrs. / Public Run Crew

Total logged hours =744.25 hrs.

It should be noted that this does not count the many hours put in but not listed on the log. A Great Thank You to all !!

Holiday Lights 2016

We just had our second holiday lights meeting of the year to prepare for our December light show. There is so much involved by so many members to prepare for this huge event. We look to make it even larger every year, since we have seen a attendance growth rate of about 20% year after year. We want it to continue to grow in Bud Waterworth's memory, who was such a great supporter of the project.

For 2015 Santa's Ice Palace was placed in a better location to allow more figures on the approach. A snow-maker was added to give Santa that "at home" feeling. As always more lights were in place around Werner division and we added a sound/light synchronized show around Friendship Park. It was so much fun to hear the train songs Mick added to the show we continued to use it on Sundays plus [Friday](#) and [Saturday](#) evening of the spring meet. Now it is time to take down the lights and control systems to upgrade them for this years festivities.

To better control the increasing crowds, we're planning on a set of stanchions and ropes in the tower parking lot so the main entrance line will no longer cross the main parking lot.

For 2016 Mike Lewandowski is adding a second Ice Palace for Santa at the North Pole. We are planning on building a 30 foot tall "mega-tree" using 64 strings of the synchronized LED's. It will be located about midway between Harnish Valley and Geronimo and will be seen through much of the ride. I'm thinking vehicles traveling over the bridge on 35th Ave will see it sparkling. Mike came up with a plan to put a 60 foot radius track constructed from old aluminum rail around the tree and have a Speeder (rail car) run slowly around pulling 4 cars with wrapped, lit packages.

Mick and I will work on programming the new Mega-tree, but we can always use more help. And that can be said for the entire project. We plan on constructing the megatree pole and 9 curved track panels in April/ may and can use help in all facets of the projects. If you can assist at all, please contact the holiday lights committee. And don't forget October will be here soon and we'll need help stringing all those lights and decorations.

If you are interested in the megatree, just search youtube and you will find so many great videos. We're using a free program called Xlights Nutcracker for programming.

Holidays Light Committee

Donna H, Mick, Judy, Mike G, Hank, Mike L, Fred, Dave P, Matt

