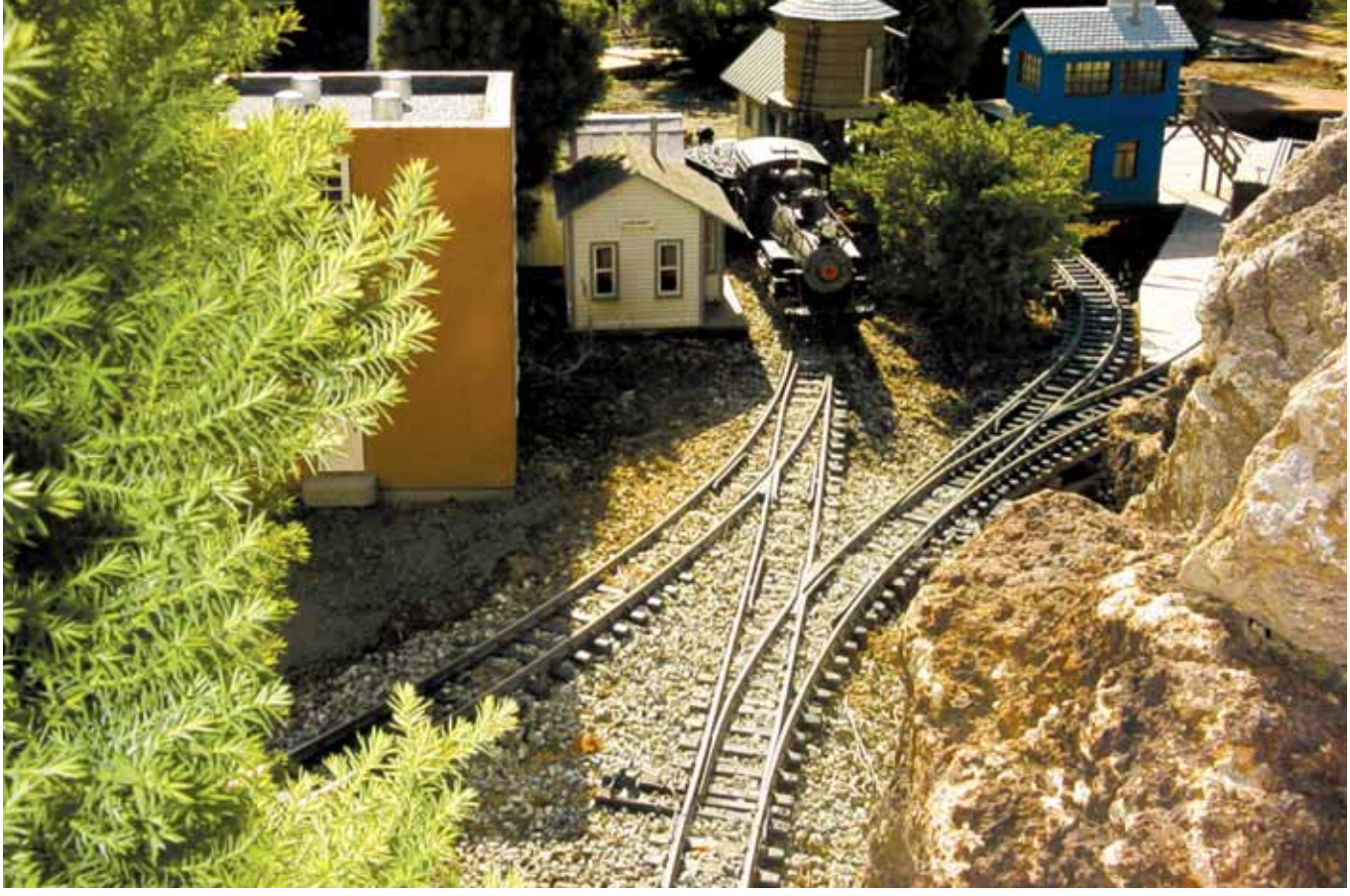


Save THOSE OLD switches

A GARDEN RAILWAYS PROJECT BEGINNER

Simple repairs bring them back to life

Ken Martin | Castro Valley, California Photos by Russ Miller

The two most commonly found switches (or turnouts) on garden railways are the LGB #1600 and the Aristo-Craft #1800. Both of these cost less than half the price of wide-radius switches, hence their popularity. Both are of reasonable quality and operation, but neither is without its problems. Unfortunately, many of these switches are thrown away because of malfunctions that can easily be remedied.

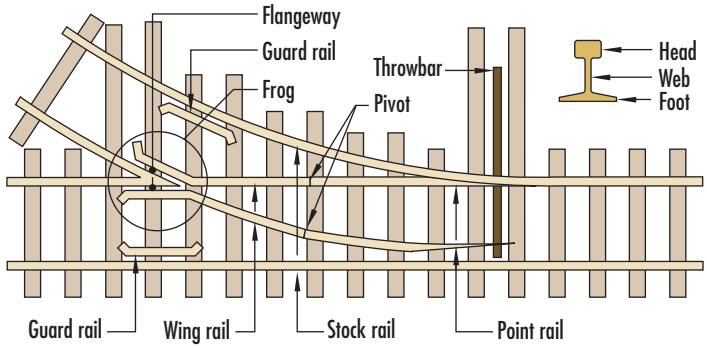
A design flaw found in both switches is that the grooves in the frogs (flangeways) are not deep enough. Some wheel flanges will ride on the bottoms of the flangeways and make the car bounce as it travels over the frog. This is not a serious problem and may not even be noticed during operation. If it is a problem, the flangeways can be deepened with the proper burr in a Dremel tool. However, this is time consuming and most likely not worth the effort, unless the shallow flangeways cause derailments.

On the flip side, each of these switches has more frustrating problems that definitely affect the operation of your railroad and are worth the time to fix. Let's start with the LGB switches.

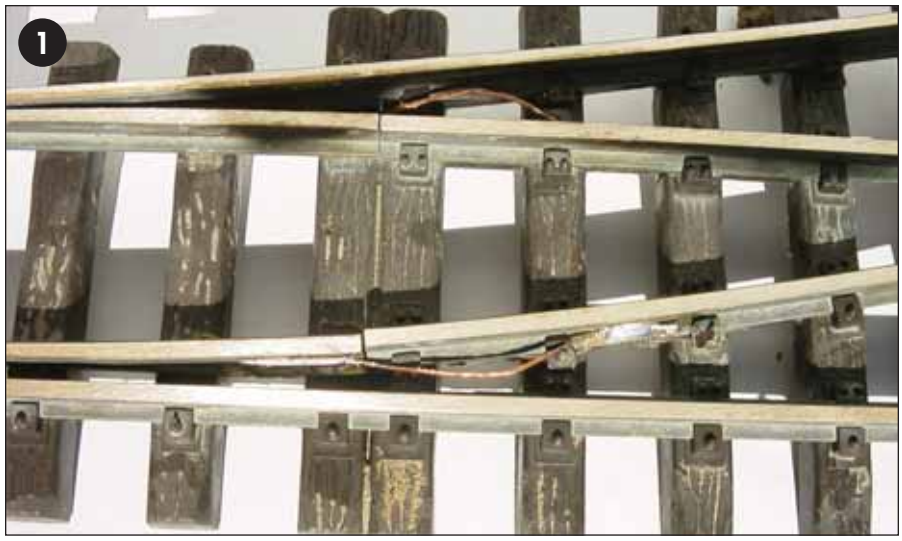
One recurring problem is the switch points (the tapered part of the rails that determines the direction of the train) going dead. Power to the points is supplied through a small berylium-copper tab that is connected under the point pivot screw and contacts the underside of the wing rail (the short, non-moving rail aligned with the back end of the point rail). This tab, and the rail it contacts, gets dirty and will no longer transmit power to the point. Longer engines may ignore this (or just hiccup), but shorter ones will stop on the switch.

Unfortunately, the construction of the LGB switch is such that, while this copper tab can be removed and cleaned, it is virtually impossible to clean the underside of the rail and get the tab to go back into place. A permanent solution is to bypass the tab with a jumper wire.

Using a flexible piece of uninsulated, stranded, 24-gauge (but no heavier) copper wire about 3" long, solder one end to the outside of the point rail about ½" back from the pivot. Be careful not to use excess solder (or melt the ties). If there is too much solder here, the point will not be able to lay snugly against the stock rail, as it must for proper operation. (A hint: Remove the screw that the point pivots on so the point can be raised to make soldering easier. Be careful with the screw, though. It is a special shouldered screw and is almost impossible to replace if lost). Now, leaving some slack in the jumper wire, solder the other end to the outside of the wing rail, about 1½" back from the pivot point. Be sure that there is enough slack in the jumper so that the point still moves freely when the job is done. Also, the wire should be soldered to the foot of the rail against the bottom of the web. Do this procedure to both points on each switch. When it is finished, both the jumpers should be on the outside of the points, where the wheel flanges don't run **(photo 1)**. I have encountered this failure so often that I now put jumpers on new LGB switches before they are installed in the railroad.



Switch and rail terminology

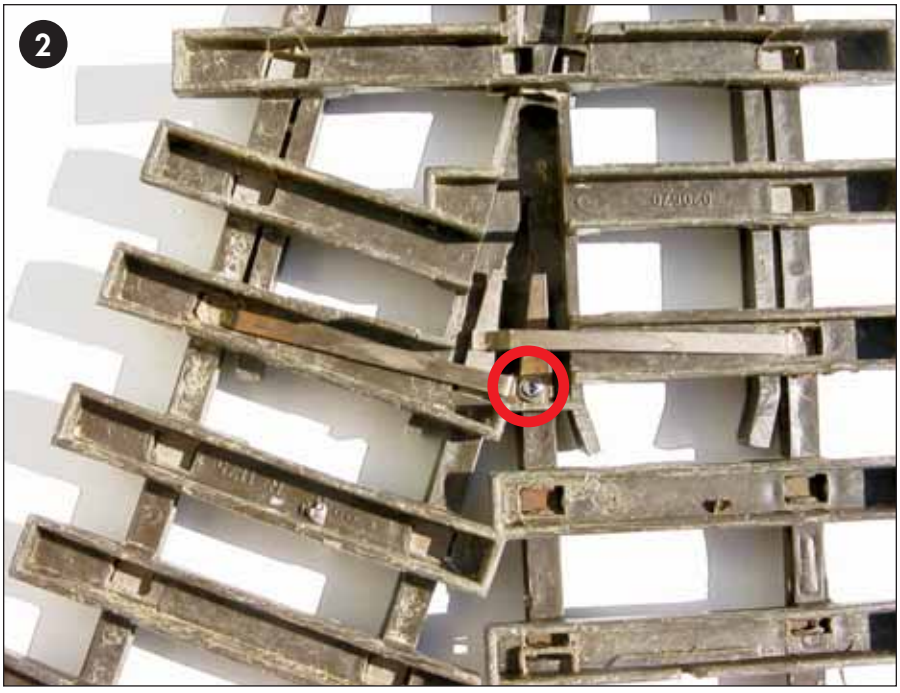


Jumper wires have been soldered between the wing rails and the point rails to maintain electrical continuity.

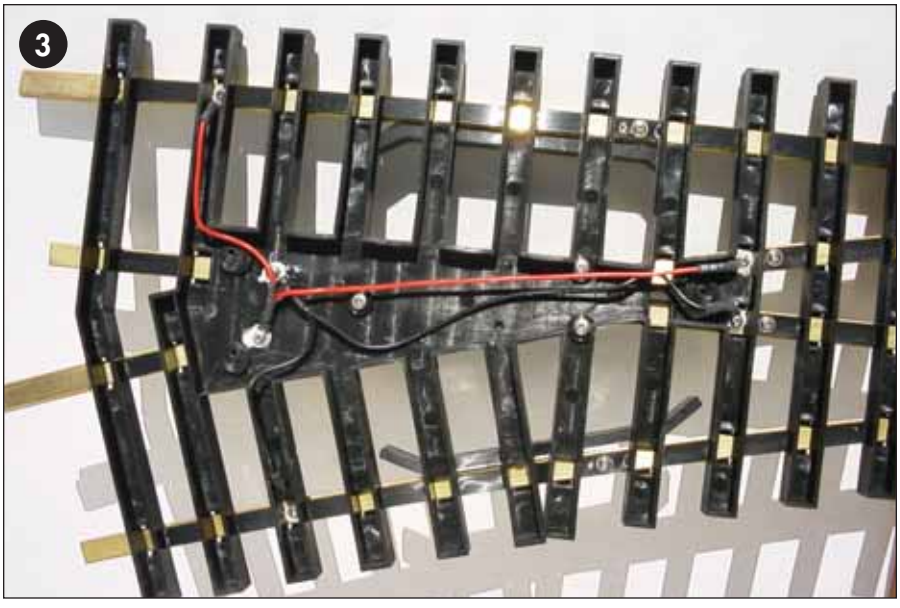
You might notice that the switch in the photograph (above) is old. It was in my junk pile until I decided to revive it. LGB switches have flat, brass, strap jumpers spot-welded to the undersides of the rails to carry power to wherever it is needed within the switch itself. These can be seen by inverting the switch. The small spot-welds occasionally break, allowing the strap to separate from the rail and leaving a dead section of rail.

A fairly quick and easy (and permanent) fix is, with the switch inverted, to drill through the strap at the weld point and into the rail with a #50 drill. Do not drill too deeply, because the foot of the rail is not very thick. Now, moving the strap aside very slightly, thread the hole with a 2-56 tap. The exercise here is to see how few 2-56 taps you can break. With a little care, one tap will last the whole operation. Be sure to lubricate the tap. Enlarge the hole in the strap slightly so a 2-56 screw will clear. Put the whole thing together with the screw through the strap and threaded into the rail **(photo 2)**.

An application of white lithium grease (a conductive grease available at any hardware store) is a good idea here. Tighten the screw as much as possible without stripping it. It may be possible to solder the errant jumper straps back onto the rails, but getting the work hot enough in a space confined by plastic ties would be a Herculean task. (Note: If you are looking for an inexpensive source of 2-56 screws,



The jumper strap on this LGB switch has been repaired with a screw (circled).



With the plastic cover plate removed, the wiring on this Aristo-Craft switch becomes accessible.

that is the size used in Aristo-Craft track.) With all this done, the switch should give a long lifetime of trouble-free operation.

Aristo-Craft switches suffer from similar problems but require different fixes. The jumper wires under an Aristo-Craft switch, which serve the same purpose as the straps under the LGB switches, are just that—wires with brass terminal ends that are attached to the rails with 2-56 screws. These screws are not always sufficiently tightened at the factory and can loosen and/or corrode over time, losing contact with the rail.

To avoid future problems with these switches, perform this procedure when they are brand new, right out of the box: Set the switch down bottom-side-up. Remove the plastic cover plate on the underside of the frog. Do a continuity check on all the jumper wires from terminal to terminal. I have found some that have the terminal crimped over the insulation or not crimped tightly enough. If you find this, cut and strip the wire and solder it directly to the terminal. Check all the jumper wires to be sure none are pinched. (If a pinched wire is found, replace it completely.) Loosen each jumper wire terminal slightly (or take it completely loose, if you like). Using white lithium grease, work the grease under the terminal between the terminal, the screw head, and the rail. Retighten the screw as tight as possible without stripping it. Make sure that the screw is actually tight against the terminal. Try to wiggle the terminal to be sure. Put a small dollop of grease over the screw head and terminal. This will protect the screw, terminal, and rail from corrosion **(see photo 3)**. Replace the cover plate.

Another problem on Aristo-Craft switches is that the point pivot screws sometimes come loose and let the point flop around. Again, right out of the box, and with the switch still bottom-side-up, remove the pivot screw and lubricate the bushing using light, plastic-friendly oil between the bushing and the surrounding plastic. Tighten this screw as tight as possible. While you still have the oil bottle in hand, tighten and lubricate the screws that hold the sharp end of the points to the throw rod.

There is one other thing that occurs with Aristo-Craft switches. If a train should derail on the switch and cause a short, any of the jumper wires can be burned out. This is not a problem with the LGB switches because the jumper straps are much sturdier than the wires on the Aristo-Craft product. The saving grace is that the wires on the Aristo-Craft switches are easy to replace; so simple, in fact, that I won't even go into it here except to recommend that, if they are burned, they be replaced with a larger-gauge wire. The stock wires appear to be about 26 or 28 gauge. Replacement with 20-, 22-, or 24- gauge wire would help avoid future problems.

Since the Aristo-Craft switches are somewhat less expensive that LGB's and (in my opinion) give a little better operation due to the wider curve, there is some compensation for the time spent doing this 25 minutes or so of extra work on them. With all this done, the switch should be trouble free for a long time.

Even the less expensive switches cost too much to just be discarded when there is a problem. As I have shown here, repairs that will save these old switches are not that difficult. II