

A Simple System for Track Electrical pickup. for Model trains

(Robert J. Wilkins 2017 - modeltrainsounds.com)

Most forms of electrical pickup into locomotives, tenders or rolling stock used on model railways has been accomplished using "wipers". Wipers are made of bronze, brass, copper, or other thin conductive sheet metal that either rub against the metal wheel flange or its inner wall to conduct current from the track for the purposes of energizing a motor, lighting a compartment or initiating sound. The problem with this metal wiper systems is that they depend on pressure applied to the wheel which does initiate a slowing of the rotation of the wheels due to frictional forces.

A simpler approach is to rely on gravity and extract the electricity from the axle rather than the wheel. Instead of a wiper a fine tube of conducting metal such as a copper collar can be used to surround the metal axle to draw current. Of course this requires a wheel set that is insulated on one side either by a plastic wheel or metal wheel with plastic insert while the other metal wheel is directly attached to the metal axle.

The concept first came from the following setup .

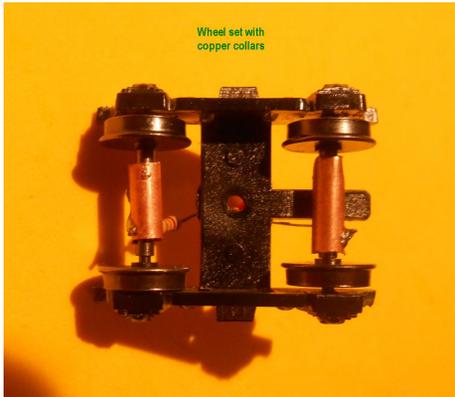


In this case 2 sets of bogie wheels would be required to draw and return current to the track.

My concept is to use both wheels in the same bogie, one to draw current for the load and one to return current to the track as shown below.

This scenario requires the following

- 1) Two wheels that have one wheel insulated and one of metal attached to the track and axle. The insulated wheel can be detached for installation of the copper collar. The other wheel is attached to the metal axle.
- 2) A small diameter copper tube of internal diameter wide enough to freely accompany the wheel axle yet small enough to be blocked from contacting the wheel wall of the insulated wheel.
- 3) A plastic truck/bogie wheel housing. A metal housing would cause a short circuit if both wheels are arranged opposite in the wheel set. This of course can be overcome by putting one wheel in one truck and the second in the other truck of the wagon.



Wheel set with copper collars attached. Here the housing is of plastic.



Metal wheels and axle with one insulated. One wheel of plastic would also work

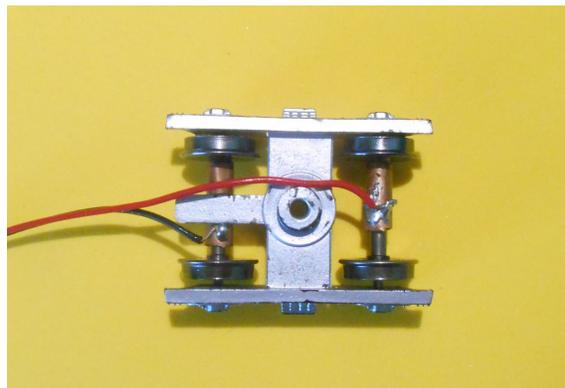


The wheel is disassembled by twisting off the insulated wheel. Note the central plastic insert that effectively insulates the 2 wheels. The copper collar for HO scale is about 1/2 inch in length and 5/32" in diameter. It is inserted onto the axle and the wheel reattached snug to the axle. Test for NMRA width compliance

The Two wheel sets are arranged on the truck with the insulated wheels set up opposite one another so each will pick up from one side of the track.
The copper collar is labeled with a black marker to indicate the insulated wheel for reference when inserting them onto the boggie truck.



Two wire leads are soldered onto each collar. The wire is inserted threaded through a hole drilled into the floor of the passenger car.





The wires are left loose enough to allow the copper collar to rest on the axle and should not interfere with movement of the boggie.

These wires will supply power from the pickup collars to be used for the job at hand.

If metal boggie trucks are used, as shown here on an old Hornby/Triang passenger car, then the 2 truck sets will be needed to avoid a short circuit. Each truck will have one pickup wheel set on it.



Here is a carriage set up using this copper collar electric track pickup and with a bidirectional, flicker free LED lighting circuit. This lighting circuit setup is described in another YouTube video or found at the website model trains sounds dot com. More details on this electrical pickup is also available here.



Wheel sets with collars are available from www.modeltrainsounds.com or can be found on eBay

One Set consists of 4 wheels, 2 axles and 2 copper tubes (1/2" L x 5/32" ID) Both 33" and 36" size wheel sets are available.

The kit includes installation instructions



