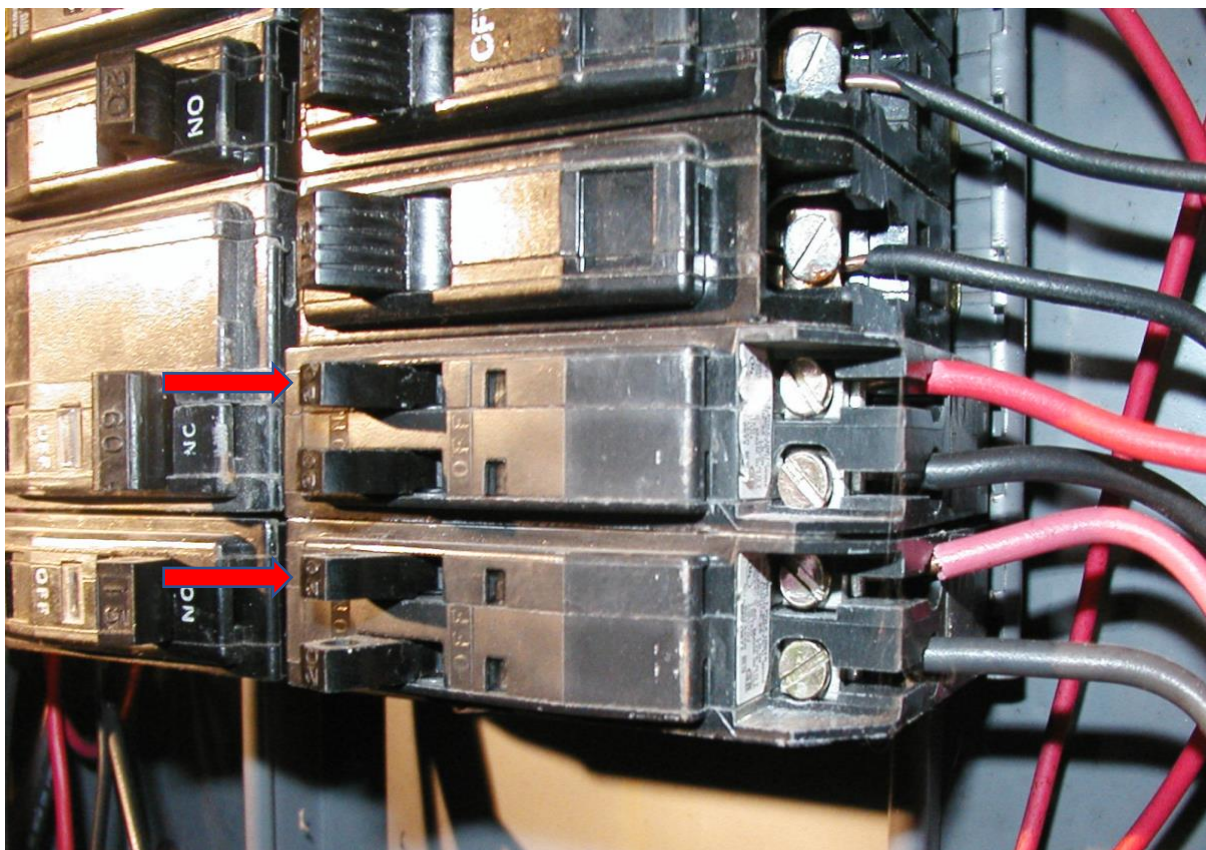


## Multi wire branch circuit by Finn Home Inspectors

A multi wire branch circuit is actually two circuits that share the same neutral (white wire) and same ground wire. The multi wire consist of one black, one red, a white and a ground wire encased in the same sheathing. Somewhere, away from the main electrical panel the circuit will serve two electrical circuits (could be a switched light and receptacle). There are several reasons an electrician may choose to wire this way, the most common is to save wire. One multi wire can replace two standard wires (which each would have their own neutral and ground wires) so two less wires are needed since the neutral and ground wires are shared.

When wired correctly in the main panel the current that comes back on the neutral (white wire) is the difference in the current being drawn on the black and the red wires. So, if the black has 12AMP and the red has 13AMP loading, the white would have only 1AMP.

The hazard arises if the Black & Red wires are connected on the same leg of power (there are two legs in a home electric service). When on the same leg of power what comes back on the neutral would be the sum of the power being drawn on the black and red, so in the case noted above 25AMP's would be coming back on the neutral wire which can overload it, causing heat buildup and a possible fire.



Above are two tandem breakers, they are double breakers that fit where usually only one breaker does. They are actually two separate breakers, but they are on the same leg of power. So, in this case the tandem breakers that feed a multi wire branch circuit can overload the neutral.

If an electrician switched the two red or black wires, they would correct the problem.

There are other ways that a multi wire branch circuit can be wired to the same leg of power, if the inspector identifies this condition, it is imperative that an electrician corrects the situation for fire safety.