In Support of the Firing and Testing of Electromagnetic Rail Guns

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ABSTACT:

In order to best equip the United States military armed forces with the most advanced equipment the development of rail guns it pertinent to keep the United States one step ahead of the rest of the world. One of the focuses of the program is to mitigate the muzzle flash signature and damage to the rails caused by the electrical arc. By attaching a shunt type device to the end of the two rails, it is possible to minimize the muzzle arch. This also allows for some of the energy used to be recaptured. The only drawback of a shunt is that as the bigger the launcher becomes, the larger and more complicated the shunt must become. Along with the shunt being more complicated, it needs to be properly tuned to proper output energy in order to maximize the mitigation of the muzzle arc. Here lies another problem. For uses in the military, the launcher needs to be able to fire any distance. In order to attain different velocities to achieve those distances, energies of different magnitudes are required. As I stated before, the shunt needs to be tuned for certain energy output. This is not a simple task. A mechanism or system would have to be developed in order to facilitate the mitigation of energy fluctuation.

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