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(54) Title: **BALANCED BARRIER DISCHARGE NEUTRALIZATION IN VARIABLE PRESSURE ENVIRONMENTS**

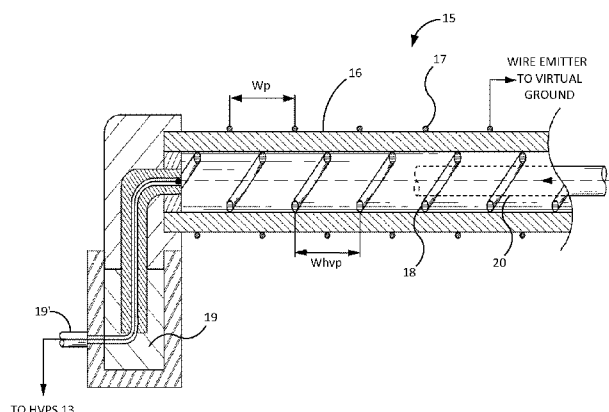


FIGURE 2

(57) Abstract: Methods and apparatus for static charge neutralization in variable pressure environments are disclosed. In particular, barrier discharge ionization apparatus may include a hollow dielectric channel disposed within a variable pressure environment and may have at least one open end, a reference emitter disposed on the outer surface of the channel, and a high voltage electrode disposed within the channel. The high voltage electrode may present a high intensity electric field to the reference emitter through the dielectric channel in response to the provision of a variable-waveform signal dictated by conditions in the variable pressure environment. This results in the generation of a plasma region with electrically balanced charge carriers within the variable pressure environment due to barrier discharge occurring at the interface of the reference emitter and the outer surface of the dielectric channel. The disclosed apparatus are compatible with either radio frequency or micro-pulse voltage power supplies.

