CLAIMS

1. An Electron Ionization (EI) source comprising a cathode system for the delivery of electrons and further comprising a filament and a plurality of current supply posts connected to the filament, the plurality of current supply posts dividing the filament into a plurality of segments, and each current supply post supplying or returning the current for at least two segments of the filament.

2. The EI source according to Claim 1, wherein the segments of the filament are arranged in a row.

3. The EI source according to Claim 2, wherein the segments of the filament are arranged in the shape of a ring or helical coil.

4. The EI source according to Claim 1, wherein the segments of the filament are arranged substantially in parallel between two current supply posts.

5. The EI source according to any one of Claims 1-4, wherein the current supply posts are spot welded to the filament.

6. The EI source according to any one of Claims 1-5, wherein the current supply posts have at least one of a reduced diameter and an increased electrical resistance near the locations of contact to the filament.

7. The EI source according to Claim 6, wherein parts of the current supply posts with reduced diameter are fabricated from Tungsten or Rhenium.

8. The EI source according to any one of Claims 1-7, wherein the current supply posts, or parts of the posts, are made from resilient material, such as Molybdenum.

9. The EI source according to any one of Claim 1-8, wherein the filament material of some segments is ablated to achieve the same electron emission in all segments.

10. The EI source according to any one of Claims 1-9, further comprising an adjustable electric voltage generator for the delivery of the heating current.

11. The EI source according to any one of Claims 1-9, further comprising a plurality of adjustable electric voltage generators for the delivery of heating currents to achieve about the same electron emission from all segments.

12. The EI source according to any one of Claims 1-11, wherein the filament is made from Tungsten.

13. The EI source according to Claim 12, wherein the filament is made from thoriated Tungsten.

14. The EI source according to any one of Claims 1-11, wherein the filament is made from Rhenium, Yttrium coated Rhenium, or Yttrium/Rhenium alloys.

15. The EI source according to Claim 1, wherein the filament essentially has a plurality of convexities fastened to the current supply posts.

16. An Electron Ionization (EI) source comprising a cathode system for the delivery of electrons and further comprising a plurality of filaments serially connected substantially in parallel to a plurality of current supply posts, wherein each current supply post supplies or returns the current for at least one of the plurality of filaments.

17. The EI source according to Claim 16, wherein a diameter of the current supply posts becomes smaller beyond each contact point with a filament.

CLAIMS

1. An Electron Ionization (EI) source comprising a cathode system for the delivery of electrons and further comprising a filament and a plurality of current supply posts connected to the filament, the plurality of current supply posts dividing the filament into a plurality of segments, and each current supply post supplying or returning the current for at least two segments of the filament, wherein the current supply posts, or parts of the posts, are made from resilient material.

2. The EI source according to Claim 1, wherein the segments of the filament are arranged in a row.

3. The EI source according to Claim 2, wherein the segments of the filament are arranged in the shape of a ring or helical coil.

4. The EI source according to Claim 1, wherein the current supply posts are spot welded to the filament.

5. The EI source according to Claim 1, wherein the current supply posts have at least one of a reduced diameter and an increased electrical resistance near the locations of contact to the filament.

6. The EI source according to Claim 5, wherein parts of the current supply posts with reduced diameter are fabricated from Tungsten or Rhenium.

7. The EI source according to Claim 1, wherein the current supply posts, or parts of the posts, are made from Molybdenum.

8. The EI source according to Claim 1, wherein the filament material of some segments is ablated to achieve the same electron emission in all segments.

9. The EI source according to Claim 1, further comprising an adjustable electric voltage generator for the delivery of the heating current.

10. The EI source according to Claim 1, further comprising a plurality of adjustable electric voltage generators for the delivery of heating currents to achieve about the same electron emission from all segments.

11. The EI source according to Claim 1, wherein the filament is made from Tungsten.

12. The EI source according to Claim 11, wherein the filament is made from thoriated Tungsten.

13. The EI source according to Claim 1, wherein the filament is made from Rhenium, Yttrium coated Rhenium, or Yttrium/Rhenium alloys.

14. An Electron Ionization (EI) source comprising a cathode system for the delivery of electrons and further comprising a filament and a plurality of current supply posts connected to the filament, the plurality of current supply posts dividing the filament into a plurality of segments, and each current supply post supplying or returning the current for at least two segments of the filament, wherein the filament essentially has a plurality of convexities fastened to the current supply posts.

15. An Electron Ionization (EI) source comprising a cathode system for the delivery of electrons and further comprising a plurality of filaments serially connected substantially in parallel to a plurality of current supply posts, wherein each current supply post supplies or returns the current for at least one of the plurality of filaments, wherein a diameter of the current supply posts becomes smaller beyond each contact point with a filament.

16. An Electron Ionization (EI) source comprising a cathode system for the delivery of electrons and further comprising a filament and a plurality of current supply posts

connected to the filament, the plurality of current supply posts dividing the filament into a plurality of segments, and each current supply post supplying or returning the current for at least two segments of the filament, wherein a diameter of each current supply post tapers up to a contact point with the filament.

17. The EI source according to Claim 16, wherein the tapering is conical.