

What is claimed is:

1. A method for delivering RF signals from an RF drive circuit to a quadrupole mass filter, the method comprising:
electrically coupling RF signals generated by the RF drive circuit to the quadrupole mass filter using a rigid conductor path, wherein the rigid conductor path:
is devoid of flexible components;
is located between the RF drive circuit and the quadrupole mass filter; and
includes one or more spring-loaded contact pins that extend longitudinally to electrically connect the RF drive circuit to the quadrupole mass filter.
2. The method of claim 1, wherein the fixed conductor path includes one or more contact pins electrically connecting together a pair of components selected from an RF coil holder board, an RF base board, an RF detector board, an upper quadrupole board and a lower quadrupole board.
3. The method of claims 1 or 2, wherein the fixed conductor path delivers the RF signal from an atmospheric pressure environment to a vacuum environment.
4. A method for tuning an RF circuit providing RF signals to a mass spectrometer, the method comprising:
coupling the RF circuit to a first quadrupole mass filter;
tuning the RF circuit coupled to the first quadrupole mass filter;
decoupling the RF circuit from the first quadrupole mass filter; and
coupling the RF circuit to a second quadrupole mass filter for operation with a second mass quadrupole filter without further tuning.
5. The method of claim 4, wherein the first and second quadrupole mass filters are associated with the same mass spectrometer.
6. The method of claim 4, wherein the first and second quadrupole mass filters are associated with different mass spectrometers.
7. A mass spectrometer comprising:
an RF drive circuit for generating RF signals;

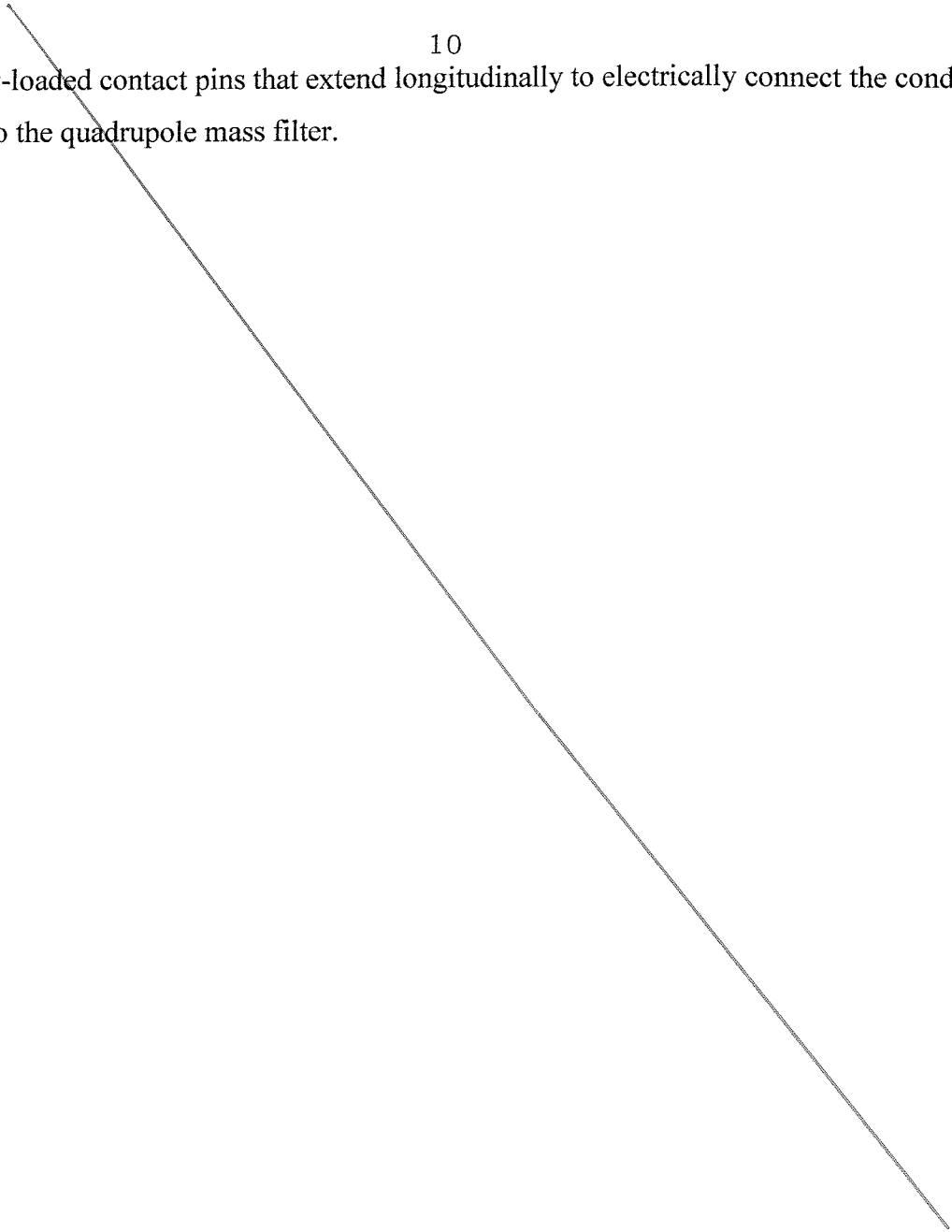
a quadrupole mass filter; and

a rigid connection assembly for delivering RF signals from the RF drive circuit to the quadrupole mass filter, the connection assembly representing the entire delivery path of RF signals from the RF drive circuit to the quadrupole mass filter and including one or more spring-loaded contact pins that extend longitudinally to electrically connect the RF drive circuit to the quadrupole mass filter.

8. The mass spectrometer of claim 7, wherein the quadrupole mass filter includes a plurality of rods each of which is coupled to the RF drive circuit by the contact pins.
9. The mass spectrometer of claims 7 or 8, further comprising an RF detector board disposed at least partially in a vacuum environment of the mass spectrometer, the fixed connection assembly including one or more rigid connectors coupling signals from the RF detector board into the vacuum environment.
10. The mass spectrometer of claim 9, further comprising a quadrupole board, wherein the rigid connectors coupling the signals from the RF detector board into the vacuum environment deliver the RF signals to the quadrupole board.
11. The mass spectrometer of any one of claims 7 to 10, wherein the fixed connection assembly is devoid of flexible components.
12. The mass spectrometer of any one of claims 7 to 10, wherein the fixed connection assembly is devoid of freestanding wires or flexible circuit boards.
13. A mass spectrometer comprising:
 - a plurality of RF drive circuits;
 - a plurality of quadrupole mass filters; and
 - a plurality of rigid connection assemblies each configured to deliver RF signals from a corresponding RF drive circuit to a corresponding quadrupole mass filter, two of the rigid connection assemblies being substantially identical to one another such that they are interchangeable with one another.

14. The mass spectrometer of claim 13, wherein the rigid connection assemblies represent the entire delivery path of RF signals from a corresponding RF drive circuit to a corresponding quadrupole mass filter.
15. The mass spectrometer of claim 14, wherein the rigid connection assemblies are devoid of flexible components.
16. The mass spectrometer of claim 14, wherein the rigid connection assemblies are devoid of freestanding wires or flexible circuit boards.
17. A mass spectrometer comprising:
 - a modular and removable RF drive circuit for generating RF signals;
 - a quadrupole mass filter; and
 - a connection assembly with signal traces that have a fixed length and are rigidly held in position relative to each other and ground for delivering RF signals from the RF drive circuit to the quadrupole mass filter with substantially constant capacitance, so that the RF drive circuit can be disconnected from the quadrupole mass filter and reconnected without retuning.
18. A method for delivering RF signals from an RF drive circuit to a quadrupole mass filter, the method comprising:
 - electrically coupling RF signals generated by the RF drive circuit to the quadrupole mass filter using a rigid conductor path that is devoid of flexible components, is located between the RF drive circuit and the quadrupole mass filter, and includes one or more spring-loaded contact pins that extend longitudinally to electrically connect the conductor path to the quadrupole mass filter.
19. A mass spectrometer comprising:
 - an RF drive circuit for generating RF signals;
 - a quadrupole mass filter; and
 - a rigid connection assembly for delivering RF signals from the RF drive circuit to the quadrupole mass filter, the connection assembly representing the entire delivery path of RF signals from the RF drive circuit to the quadrupole mass filter and including one or more

spring-loaded contact pins that extend longitudinally to electrically connect the conductor path to the quadrupole mass filter.



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1. A method for delivering RF signals from an RF drive circuit to a quadrupole mass filter, the method comprising:
electrically coupling RF signals generated by the RF drive circuit to the quadrupole mass filter using a rigid conductor path that is devoid of flexible components, is located between the RF drive circuit and the quadrupole mass filter and includes one or more spring-loaded contact pins that extend longitudinally to electrically connect the conductor path to the quadrupole mass filter.
2. The method of claim 1, wherein the fixed conductor path includes one or more contact pins electrically connecting together a pair of components selected from an RF coil holder board, an RF base board, an RF detector board, an upper quadrupole board and a lower quadrupole board.
3. The method of claim 1, wherein the fixed conductor path delivers the RF signal from an atmospheric pressure environment to a vacuum environment.
4. A mass spectrometer comprising:
an RF drive circuit for generating RF signals;
a quadrupole mass filter; and
a rigid connection assembly for delivering RF signals from the RF drive circuit to the quadrupole mass filter, the connection assembly representing the entire delivery path of RF signals from the RF drive circuit to the quadrupole mass filter and including one or more spring-loaded contact pins that extend longitudinally to electrically connect the connection assembly to the quadrupole mass filter.
5. The mass spectrometer of claim 4, wherein the quadrupole mass filter includes a plurality of rods each of which is coupled to the RF drive circuit by the contact pins.
6. The mass spectrometer of claim 4, further comprising an RF detector board disposed at least partially in a vacuum environment of the mass spectrometer, the fixed connection assembly

including one or more rigid connectors coupling signals from the RF detector board into the vacuum environment.

7. The mass spectrometer of claim 6, further comprising a quadrupole board, wherein the rigid connectors coupling the signals from the RF detector board into the vacuum environment deliver the RF signals to the quadrupole board.

8. The mass spectrometer of claim 4, wherein the fixed connection assembly is devoid of flexible components.

9. The mass spectrometer of claim 4, wherein the fixed connection assembly is devoid of freestanding wires or flexible circuit boards.