CLAIMS:

1. A method for manufacturing a multipole assembly of a mass spectrometer, the method comprising:

machining a body to form an opening extending along a predetermined axis through the body, wherein the opening has a profile that defines two or more seats, each seat being configured to guide a rod of the multipole assembly,

cutting the body into a plurality of pieces to form a plurality of identical rod supports,

seating a first plurality of rods in the seats of a first pair of the rod supports, and seating a second plurality of rods in the seats of a second pair of the rod supports, wherein the second pair of rod supports are rotated relative to the first pair of rod supports.

2. A method as claimed in Claim 1, wherein the body has a substantially cylindrical outer face.

3. A method as claimed in any preceding claim, wherein at least the seats are formed by electrical discharge machining of the body.

4. A method as claimed in any preceding claim, wherein each of the seats has a profile for contacting the rod at only two tangential points.

5. A method as claimed in Claim 4, wherein each seat comprises a pair of rod contact surfaces, which are straight and arranged at an angle to one another.

6. A method as claimed in Claim 5, wherein the rod contact surfaces are arranged at substantially 90 degrees to one another.

7. A method as claimed in Claim 5 or 6, wherein the rod contact surfaces are spaced from one another.

8. A method as claimed in any of Claims 5 to 7, wherein the rod contact surfaces are joined by a curved surface.

9. A method as claimed in any preceding claim, wherein the seats are substantially V-shaped.

10. A method as claimed in any preceding claim, wherein the body is metal.

11. A method as claimed in any preceding claim, wherein the body is cut into four identical pieces to form four identical rod supports.

12. A method as claimed in any preceding claim, wherein the multipole assembly comprises a quadrupole assembly, wherein each rod support comprises a pair of opposed seats, and the second pair of rod supports are rotated through 90 degrees relative to the first pair of rod supports.

13. A method as claimed in any preceding claim, wherein the rod supports of the first pair of rod supports and the rod supports of the second pair of rod supports are alternated with one another in a length direction of the rods.