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[21] Appl. No. **740,243**  
 [22] Filed **June 26, 1968**  
 [45] Patented **Feb. 2, 1971**

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 June, 1965; 250-41.9(2)

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[54] **QUADRUPOLE MASS FILTER WITH FRINGING-FIELD PENETRATING STRUCTURE**  
 13 Claims, 3 Drawing Figs.

[52] U.S. Cl..... **250/41.9,**  
 313/83  
 [51] Int. Cl..... **H01j 39/34**  
 [50] Field of Search..... 250/41.9(2),  
 41.9ISB; 313/83, 85; 330/4.7, 4.5

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**ABSTRACT:** An ion source positioned near the entrance of a quadrupole mass filter focuses a beam of positive ions at a point inside the quadrupole where the defocusing effect of the fringing field is substantially reduced. This beam of ions passes into the quadrupole through two concentric conical electrodes operated at different potentials and positioned with their larger ends outside the quadrupole near the ion source and their smaller ends inside the quadrupole near the focal point of the ion beam. An ion detector positioned near the exit of the quadrupole receives ions transmitted by the quadrupole. These ions pass through two concentric cylindrical electrodes operated at different potentials and positioned between the exit of the quadrupole and the ion detector.

