**APPARATUS FOR STEREOTACTIC RADIOSURGERY**

Stereotactic radiosurgery apparatus for eliminating misalignments due to mechanical inaccuracies and sag of a linear accelerator radiation-emitting head which is swung through an arc comprises a guiding and support structure with a first bearing system for accurately rotating a collimator through a precise arc in a vertical plane with respect to a predetermined center point in the plane corresponding to a treatment location, a second gimbal bearing system for coupling the collimator to the head so that the rotating head can drive the collimator through its arc while mechanically uncoupling the head from the collimator by eliminating torques and forces on the collimator which would be exerted by mechanical inaccuracies or sag of the head, and a third bearing system for rotatably supporting a stereotactic floorstand for rotation about a vertical axis which intersects the center point. Since the movement of the collimator and the rotation of the floorstand are precisely controlled with respect to the center point, the apparatus ensures that radiation from the head will be accurately focused at the center point for all rotational positions of the head and floorstand. Mechanical linking arrangements are shown for allowing the floorstand to rotate automatically upon rotation of a patient treatment table. Although the linking arrangements are used to drive the rotation of the floorstand, the linkage arrangements prevent the introduction of positional inaccuracies in the floorstand rotation.
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INTERNATIONAL SEARCH REPORT

I. CLASSIFICATION OF SUBJECT MATTER

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC: A 61 N 5/10, G 21 K 1/02, A 61 B 19/00

II. FIELDS SEARCHED

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Documentation Search other than Minimum Documentation to the extent that such Documents are Included in the Fields Searched

III. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<tr>
<th>Category</th>
<th>Citation of Document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to Claim No.</th>
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<td>A EP, A, 0075831 (SIEMENS AG) 6 April 1983 see figure 1; abstract</td>
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<td>A EP, A, 0083756 (SIEMENS AG) 20 July 1983 see claims; figures 1,2</td>
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<td>A FR, A, 2385374 (SIEMENS AG) 27 October 1978 see claim 1; figure 1</td>
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<td>A US, A, 4583537 (DERECHINSKY et al.) 22 April 1986 see column 5, lines 56-63; column 6, lines 10-20, 39-47; figure 1</td>
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<td>A DE, A, 2014151 (KREUZER) 16 December 1971 see page 8, lines 16-25; figure 1</td>
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<td>A US, A, 3766384 (ANDERSON) 16 October 1973, see column 9, lines 25-33; figures</td>
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IV. CERTIFICATION

Date of the Actual Completion of the International Search: 12th July 1989

Date of Mailing of this International Search Report: 02 AUG 1989

International Searching Authority: EUROPEAN PATENT OFFICE

Signature of Authorized Officer: P.C.G. VAN DER PUTTEN
## VI. OBSERVATIONS WHERE CERTAIN CLAIMS WERE FOUND UNSEARCHABLE

This international search report has not been established in respect of certain claims under Article 17(2) (a) for the following reasons:

1. Claim numbers .........., because they relate to subject matter not required to be searched by this Authority, namely:

2. Claim numbers .........., because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claim numbers .........., because they are dependent claims and are not drafted in accordance with the second and third sentences of PCT Rule 6.4(a).

## VII. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This International Searching Authority found multiple inventions in this International application as follows:

See PCT/ISA/206 sent to you on 13th April 1989.

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims of the international application.
2. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims of the international application for which fees were paid, specifically claims:
3. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claim numbers:
4. As all searchable claims could be searched without effort justifying an additional fee, the International Searching Authority did not invite payment of any additional fee.

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- The additional search fees were accompanied by applicant's protest.
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For more details about this annex: see Official Journal of the European Patent Office, No. 12/82