

Title (en)  
Protection device for neutron tubes.

Title (de)  
Schutzvorrichtung von Neutronenröhren.

Title (fr)  
Dispositif de protection des tubes neutroniques.

Publication  
**EP 0357133 B1 19940504 (FR)**

Application  
**EP 89202146 A 19890824**

Priority  
FR 8811259 A 19880826

Abstract (en)  
[origin: EP0357133A1] Protection device for a neutron tube comprising an ion source, the anode of which (2) is brought to a positive potential in relation to the cathode (3) by means of a supply source and the ionic beam of which, which is accelerated by means of the acceleration electrode (5), strikes a target (6) which is arranged on an insulating support (9) and placed at a negative potential provided by a supply HT. <??>The said protection device consists of electrical limiting elements of the tube current (11, 12) and/or of the target voltage which are made unchangeable by enclosing them in the interior of the neutron tube in such a way that any attempt to modify the electrical parameters determining the normal functioning conditions of the tube requires the latter to be opened. <??>Field of application:neutron tubes. <IMAGE>

IPC 1-7  
**H05H 3/06**

IPC 8 full level  
**G21G 4/02** (2006.01); **H01J 27/02** (2006.01); **H01J 37/08** (2006.01); **H05H 3/06** (2006.01); **H05H 6/00** (2006.01)

CPC (source: EP US)  
**H05H 3/06** (2013.01 - EP US)

Citation (examination)  
Physica IV no. 11, Décembre 1937, pages 1190-1199 ; F.M. PENNING et J.H.A. MOUBIS : "Un tube neutronique sans pompage".

Designated contracting state (EPC)  
DE FR GB NL

DOCDB simple family (publication)  
**EP 0357133 A1 19900307; EP 0357133 B1 19940504**; DE 68915081 D1 19940609; DE 68915081 T2 19941027; FR 2636774 A1 19900323; JP 2825024 B2 19981118; JP H02114498 A 19900426; US 5013969 A 19910507

DOCDB simple family (application)  
**EP 89202146 A 19890824**; DE 68915081 T 19890824; FR 8811259 A 19880826; JP 21616089 A 19890824; US 39810389 A 19890823