



US006002207A

United States Patent [19]

[11] Patent Number: **6,002,207**

Beeteson et al.

[45] Date of Patent: **Dec. 14, 1999**

[54] **ELECTRON SOURCE WITH LIGHT SHUTTER DEVICE**

[75] Inventors: **John Beeteson, Skelmorlie; Andrew Knox, Kilbirnie, both of United Kingdom**

[73] Assignee: **International Business Machines Corporation, Armonk, N.Y.**

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[21] Appl. No.: **08/676,854**

Primary Examiner—Michael Day
Attorney, Agent, or Firm—Scully, Scott, Murphy & Presser;
 Jay P. Sbröllini, Esq.

[22] Filed: **Jul. 3, 1996**

[30] **Foreign Application Priority Data**

[57] **ABSTRACT**

Aug. 25, 1995 [GB] United Kingdom 9517465
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[51] Int. Cl.⁶ **H01J 40/18; H01J 29/68**

[52] U.S. Cl. **313/542; 313/543; 313/525; 313/537; 313/422; 315/169.1; 345/75**

[58] Field of Search **313/422, 495, 313/496, 497, 525, 537, 540, 543, 336; 315/169.1; 345/74, 75**

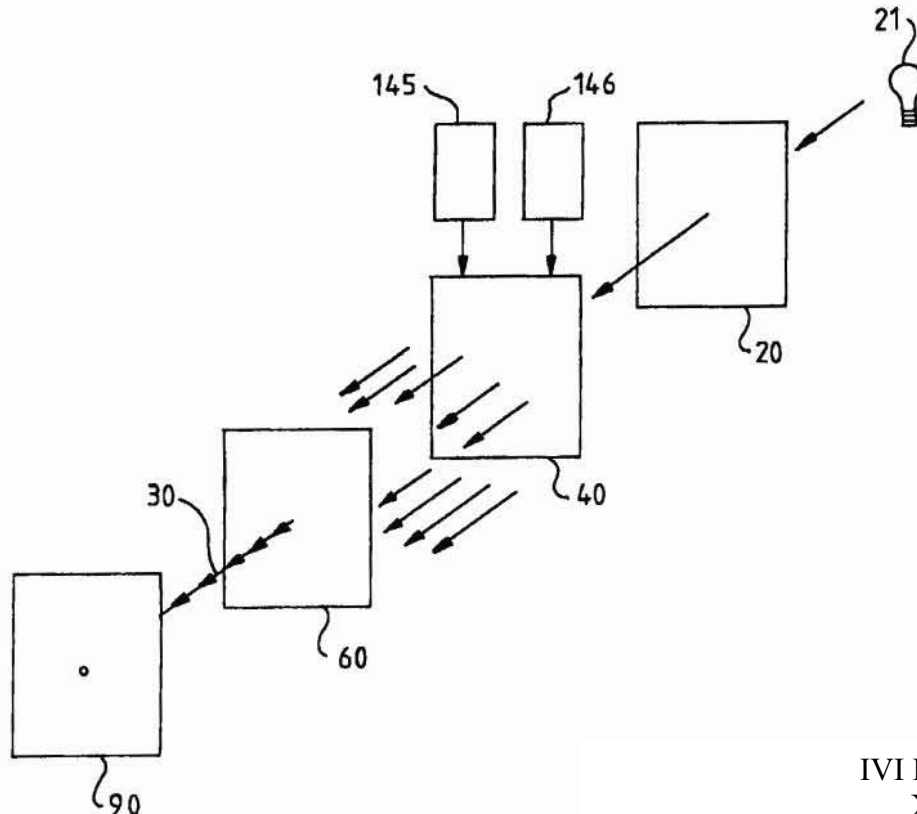
An electron source includes a photocathode (20) for emitting electrons on excitation by incident light radiation. A permanent magnet (60) is perforated by a plurality of channels extending between opposite poles of the magnet (60). The magnet (60) generates, in each channel, a magnetic field which forms electrons received from the photocathode (20) into an electron beam for guidance towards a target (90). A shutter device (22) is provided having an array of addressable shutter elements, each selectively actuatable to alternately admit and block passage of light radiation onto the photocathode (20) in response to an address signal.

[56] **References Cited**

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33 Claims, 9 Drawing Sheets



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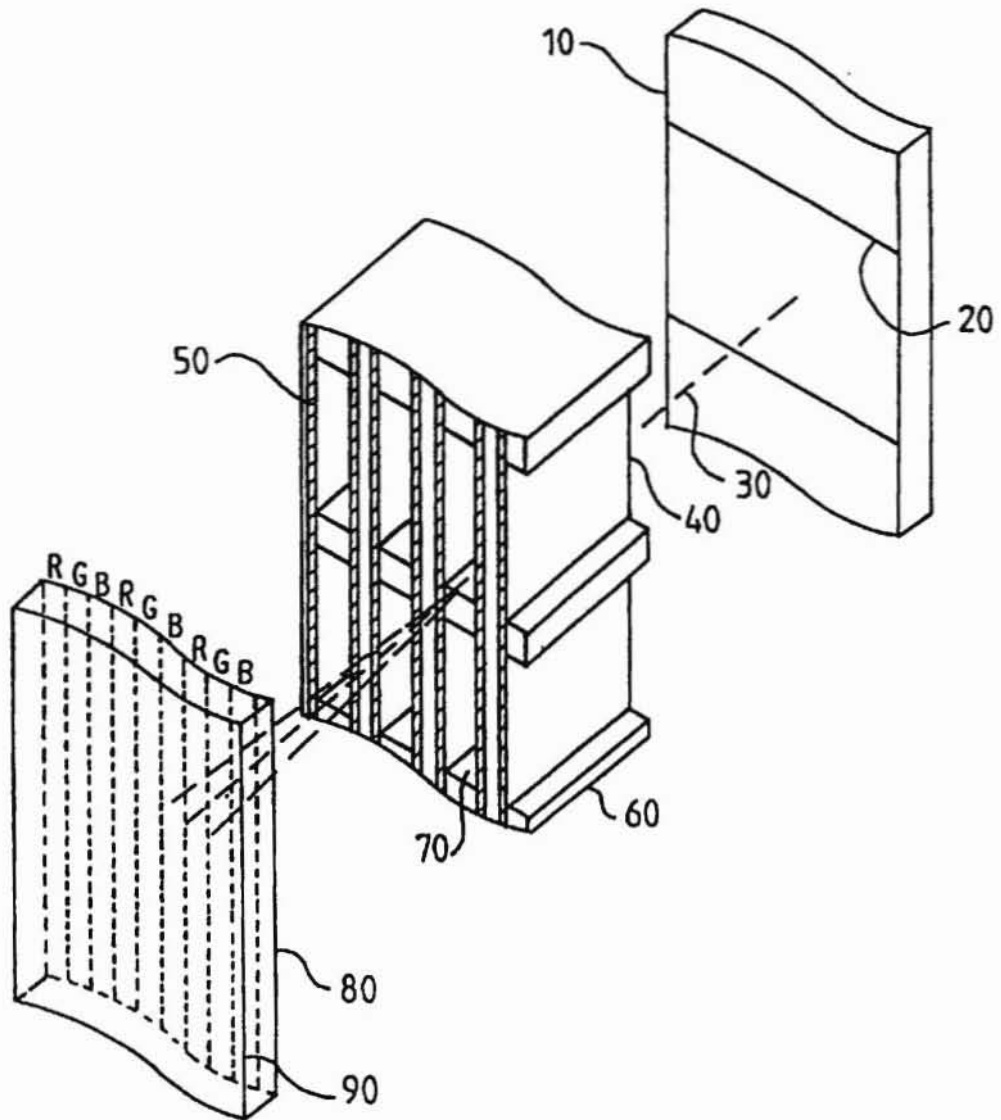


FIG. 1

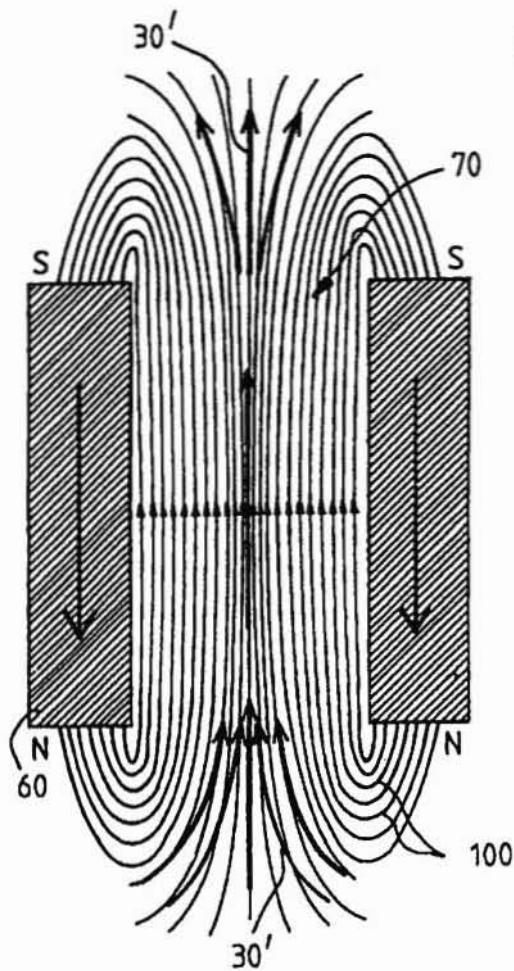


FIG. 2A

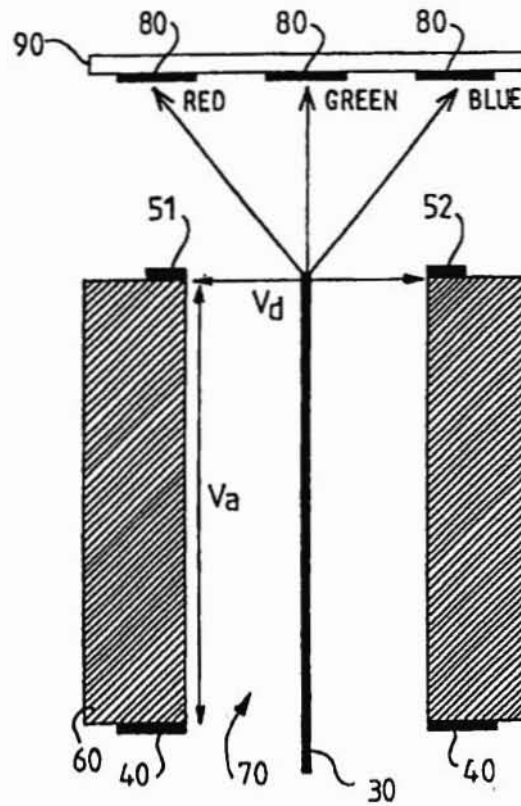


FIG. 2B

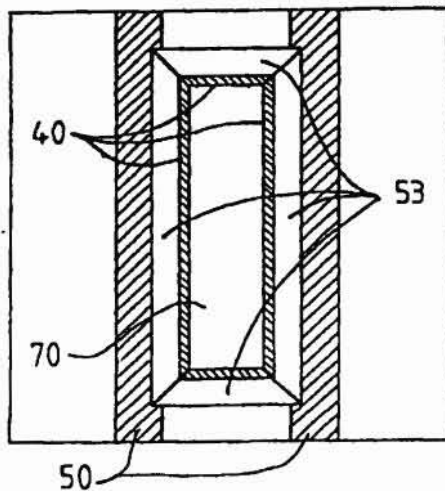
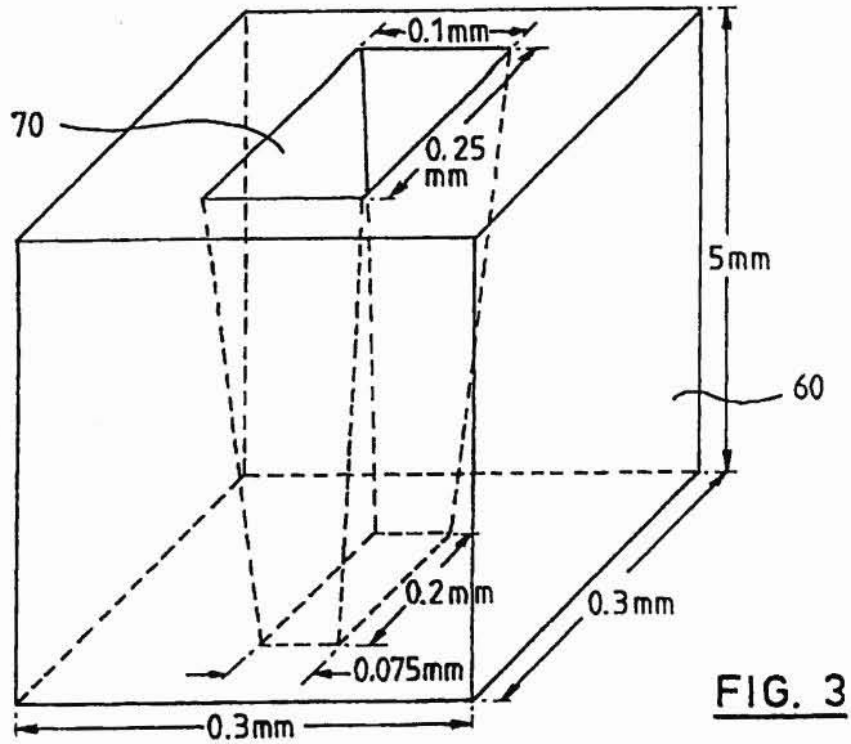


FIG. 4A

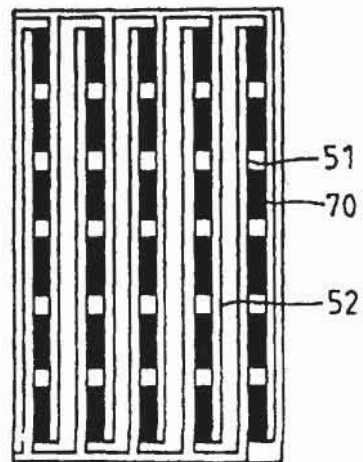


FIG. 4B

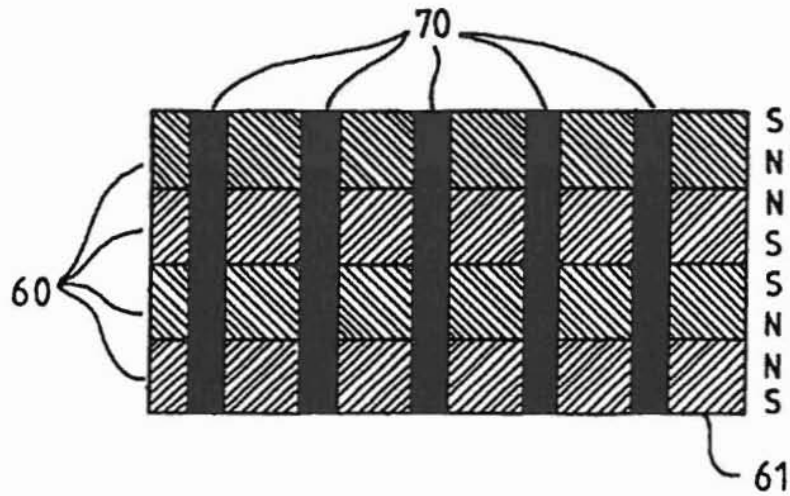


FIG. 5A

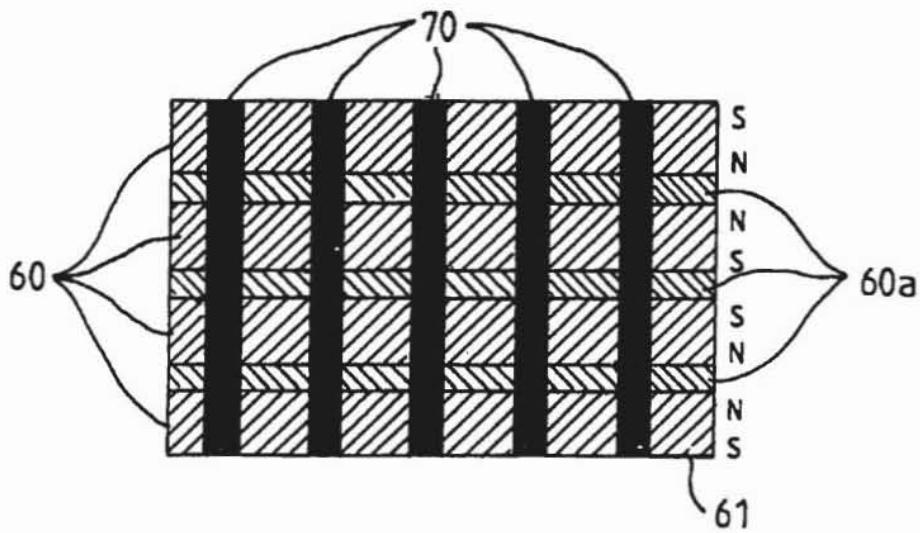


FIG. 5B

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