

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ROBERT S. SYMONS

Appeal No. 96-1474
Application 08/041,765¹

ON BRIEF

Before URYNOWICZ, KRASS and JERRY SMITH, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1 through 5, 8, 9 and 11 through 21. Claim 10 has been

¹Application for patent filed April, 2, 1993.

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cancelled and claims 6 and 7 have been indicated by the examiner as allowable.

The invention pertains to an electron beam focusing system for a traveling wave tube (TWT) which provides substantially no magnetic flux leakage and has improved axial thermal conductivity.

Representative independent claim 1 is reproduced as follows:

1. A magnetic focusing system for an electron beam of a helix traveling wave tube (TWT), comprising:

a focusing structure including a plurality of polepieces, a plurality of non-magnetic spacers respectively interlaced between adjacent ones of said plurality of polepieces, and permanent magnets adjoining outermost ends of each of said plurality of polepieces, said magnets being magnetized in a radial direction, a first portion of said plurality of polepieces being alternately disposed orthogonal to a second portion of said plurality of polepieces;

a beam tunnel enclosed by said plurality of polepieces and said plurality of spacers, and extending in an axial direction through said focusing structure for receiving said electron beam; and

an outer shell encapsulating said focusing structure;

wherein said plurality of polepieces direct magnetic flux from said magnets to said beam tunnel for focusing of said beam, and said outer shell provides a return path for said magnetic flux to said magnets.

The examiner relies on the following references:

Veith et al. (Veith)	2,876,373	Mar. 3, 1959
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Scott

3,755,706

Aug. 28, 1973

Claims 1 through 5, 8, 9 and 11 through 21 stand rejected under 35 U.S.C. 103 over Veith in view of Scott.

Reference is made to the brief and answer for the respective positions of appellant and the examiner.

OPINION

At the outset, we note that, in accordance with appellant's grouping of the claims at page 5 of the brief, all claims will stand or fall together. Accordingly, we will focus our attention on independent claim 1.

The examiner contends that Veith discloses the focusing structure as claimed but for the non-magnetic spacers interlaced between adjacent polepieces. The examiner further contends that since Scott does disclose the placement of non-magnetic spacers between adjacent polepieces in a focusing structure, it would have been obvious, within the meaning of 35 U.S.C. 103, to have included interlaced non-magnetic spacers in Veith since it "would have provided the advantageous benefits of the vacuum sealing spacers, suggested by Scott, to other functionally analogous focussing arrangements in the same field of endeavor" [Paper No. 9, page 4].

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For his part, appellant does not deny that Veith discloses the claimed invention but for the non-magnetic spacers. Rather, appellant contends that because Veith and Scott are directed to different and incompatible types of focusing structures for TWTs, the examiner's combination is improper and can only be arrived at by picking and choosing elements in accordance with appellant's claims. Appellant also contends that the age of the references (more than twenty years old) leads to a finding of non-obviousness [brief, page 9]. Appellant further contends that there would have been no motivation to combine the teachings of Veith and Scott since Veith does not require a vacuum seal within the tunnel bore (because it is intended to be utilized with a discharge vessel that contains the electron beam and helix) while any desirability of a vacuum seal in Scott "is entirely within the context of a cylindrical geometry focusing system" [brief, page 10] and Scott does not suggest that the vacuum seal would be applicable to other focusing systems, such as the rectangular geometry focusing system of Veith.

First, with regard to appellant's argument regarding the age of the applied references somehow being indicative of non-obviousness of the claimed subject matter, we agree with the examiner that the age of the references, per se, is not

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indicative of non-obviousness absent a showing that artisans tried and failed to solve the problems of the prior art. In re McGuire, 416 F.2d 1322, 1327, 163 USPQ 417, 421 (CCPA 1969).

Nevertheless, we will not sustain the rejection of claim 1, nor the rejection of any other claim, under 35 U.S.C. 103 because while the examiner appears to have established a prima facie case of obviousness, identifying the prior art, pointing out the differences between the prior art and the claimed subject matter, and giving a reason why it would have been obvious to modify the prior art such that the claimed subject matter as a whole would have been obvious in view thereof, the preponderance of the evidence before us weighs in appellant's favor.

More particularly, while Veith discloses the claimed subject matter but for the non-magnetic spacers and Scott does disclose such non-magnetic spacers, there must have been some reason why the artisan would have been led to have provided the non-magnetic spacers of Scott in the device of Veith in the manner claimed.

While Scott provides a purpose for the non-magnetic spacers, i.e., "to form the hollow cylindrical vacuum tight envelope 7 of the tube 1" [column 2, lines 55-56] and "to

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facilitate thermal conduction from the helix 6 to the envelope 7" [column 3, lines 1-2], there would have been no reason, other than impermissibly picking and choosing elements to meet the claimed subject matter, to apply these teachings to the device of Veith. There is no vacuum tight envelope around tunnel 25 in Veith because whatever envelope there is is provided by soft iron plates 16 and 17 which enclose the bar magnet structure. Thus, there would have been no need to provide non-magnetic spacers for providing a vacuum tight envelope around beam tunnel 25 in Veith. With regard to Scott's teaching of "thermal conduction," this would not appear to have been a problem in Veith because, as explained at column 5, lines 32-66, thereof, in explaining how one gets to Figure 4 from Figure 3, Veith describes how the vertical magnets in Figure 3 may be made progressively thicker in the z-direction until "the magnets abut against each other..." or until the "places of abutment are allowed to pass into one another..." Such an abutment, itself, would result in a structure (Figure 4 of Veith) with good thermal conductivity. Separate non-magnetic spacers would not have been necessary to provide for such thermal conductivity nor would there be any place to put such non-magnetic spacers in the structure of Veith

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even if an artisan would somehow have been led to try to include such spacers in the device of Veith.

We agree with appellant that the non-magnetic spacers in the cylindrical geometry focusing system of Scott simply do not lend themselves for use in the rectangular geometry focusing system of Veith. In our view, the examiner's conclusion to the contrary could only have been reached through the use of impermissible hindsight having the instant claimed subject matter in mind.

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The examiner's decision rejecting claims 1 through 5,
8, 9 and 11 through 21 under 35 U.S.C. 103 is reversed.

REVERSED

STANLEY M. URYNOWICZ, JR.)	
Administrative Patent Judge)	
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ERROL A. KRASS)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES
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JERRY SMITH)	
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