

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte GILBERT Y. CHAN and KENNETH G. PRESTON

Appeal No. 97-1703
Application 08/382,432¹

ON BRIEF

Before McQUADE, NASE and CRAWFORD, Administrative Patent Judges.
McQUADE, Administrative Patent Judge.

DECISION ON APPEAL

This appeal is from the final rejection of claims 9 through 12, all of the claims pending in the application.

¹ Application for patent filed February 2, 1995. According to appellants, the application is a division of Application 08/048,575, filed April 15, 1993, now U.S. Patent No. 5,414,555, issued May 9, 1995, which is a continuation of Application 07/820,010, filed January 13, 1992, now abandoned.

The invention relates to a method for forming the primary and tertiary mirrors of a three-mirror optical system. Claim 9 is illustrative and reads as follows:

9. A method of fabricating the primary and tertiary mirrors of a three-mirror optical system having a primary mirror, a second mirror and a tertiary mirror, the primary and tertiary mirrors having different surface contours, the method comprising the steps of:

a) selecting a pre-shaped substrate of suitable material and defining a common vertex on said substrate for said primary and tertiary mirrors;

b) turning said substrate about an axis through said vertex and applying a cutting tool to a selected surface of said substrate;

c) controlling the axial position of said cutting tool while moving said cutting tool radially relative to said axis to form a selected surface shape of said primary mirror;

d) controlling the axial position of said cutting tool while continuing to move said cutting tool radially relative to said axis to form a selected surface shape of said tertiary mirror; thereby leaving a unitary substrate having said primary and tertiary mirrors formed integrally thereon.

The references relied upon by the examiner as evidence of obviousness are:

Douglass et al. (Douglass)	4,343,206	Aug. 10, 1982
Korsch	4,737,021	Apr. 12, 1988

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Claims 9 through 12 stand rejected under 35 U.S.C. § 103 as being unpatentable over Douglass in view of Korsch.²

Reference is made to the appellants' main and reply briefs (Paper Nos. 14 and 16) and to the examiner's answer (Paper No. 15) for the respective positions of the appellants and the examiner with regard to the merits of this rejection.

Douglass discloses a method and apparatus for machining nonaxisymmetric surfaces on a workpiece mounted on a rotating spindle. As described by Douglass,

the machine tool comprises a generally T-shaped base 18 upon which an X slide 20 and a Y slide 22 are mounted in a suitable conventional manner for displacement in any desired manner along planes disposed perpendicular to one another as conventionally practiced. The Y slide 22 is provided with a conventional spindle mechanism generally shown at 24 and which is rotated by a suitable drive motor shown at 26.

A third slide or auxiliary slide referred to herein as the Z slide is shown at 28 and is movably mounted on the X slide 20. The Z slide 28 is shown supporting a conventional tool holder 30 and metal-working tool 32 for machining the surface 12 of the workpiece 10 upon contact therewith.

² In the final rejection (Paper No. 6), claims 9 through 12 also were rejected under 35 U.S.C. § 112, second paragraph. Upon reconsideration, the examiner has withdrawn this rejection (see the advisory action dated July 30, 1996, Paper No. 10).

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To machine one or more nonaxisymmetric sector surfaces, such as shown at 16 in FIGS. 1 and 2 or the entire surface as shown at 17 in FIG. 3, in a workpiece being rotated about a central axis of rotation, the auxiliary slide 28 is displaced at a relatively rapid rate toward or away from the surface of the workpiece in accordance with a predetermined program so as to provide the off-axis sector [column 3, line 47 through column 4, line 1].

Korsch discloses a "three-mirror optical system having a real, accessible entrance (or exit) pupil making it particularly suitable for use as a collimator but which may also be used as a telescope and where the primary and tertiary mirrors are off-centered from the optical axis" (column 1, lines 7 through 12). The Korsch specification indicates that the primary and tertiary mirrors are differently contoured and that the specific parameters of the system are of paramount importance in achieving the foregoing objective.

As conceded by the examiner (see page 3 in the answer), the Douglass reference does not meet the limitations in independent claims 9 and 11 relating to the fabrication on a unitary substrate of differently contoured primary and tertiary mirrors of a three-mirror optical system. Although the Korsch reference discloses a three-mirror optical system having differently

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contoured primary and tertiary mirrors, it does not teach or suggest that these mirrors be formed on a unitary substrate. The examiner's conclusion that it would have been obvious to one of ordinary skill in the art to combine these two references so as to arrive at the subject matter recited in claims 9 and 11 (see pages 3 and 4 in the answer) is not well taken. Douglass' disclosure of a general method for machining nonaxisymmetric surfaces on a workpiece or substrate has little, if any, meaningful relevance to the formation of the primary and tertiary mirrors in Korsch's three-mirror optical system. In this light, it is evident that the only suggestion for combining these two references so as to arrive at the methods recited in independent claims 9 and 11, and in claims 10 and 12 which depend therefrom, stems from hindsight knowledge derived from the appellants' disclosure. The use of such hindsight knowledge to support a conclusion of obviousness is, of course, impermissible.

Accordingly, we shall not sustain the standing 35 U.S.C. § 103 rejection of claims 9 through 12 as being unpatentable over Douglass in view of Korsch.

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The decision of the examiner is reversed.

REVERSED

JOHN P. McQUADE)	
Administrative Patent Judge)	
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JEFFREY V. NASE)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES
)	
)	
MURRIEL E. CRAWFORD)	
Administrative Patent Judge)	

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