The opinion in support of the decision being entered today was **not** written
for publication and is **not** binding precedent of the Board.

Paper No. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HUGO J. CORNELISSEN and
ADRIANUS J.S.M. DE VAAN

Appeal No. 2001-1116
Application No. 09/070,222

ON BRIEF

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

HAIRSTON, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1 through 5.

The disclosed invention relates to an image projection system wherein a quarter-wave plate is located between each reflecting image display panel and a polarizing beam splitter.

Claim 1 is the only independent claim on appeal, and it reads as follows:

1. An image projection system comprising an illumination system with a light source for supplying an illumination beam, a modulation system with at least one reflecting image display panel for modulating this light beam in conformity with image information to be projected, the display panel having a layer of liquid crystalline material and having pixels with reflective portions,

and a projection lens system for projecting said image information, a color-separating prism being arranged between the modulation system and the illumination system, and a polarizing beam splitter being arranged between the illumination system and the color-separating system, characterized in that the reflective display panel is a liquid crystalline display panel having pixels which can be switched between a transparent state and a diffusing state, and a $\lambda/4$ plate is arranged between the reflective portions of the pixels of the display panel and the polarizing beam splitter.

The references relied on by the examiner are:

Kobayashi et al. (Kobayashi)	5,305,126	Apr. 19, 1994
Hong	5,706,063	Jan. 6, 1998
Chiu et al. (Chiu)	5,786,934	July 28, 1998 (effective filing date Mar. 23, 1995)

Claims 1 and 3 through 5 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chiu in view of Kobayashi.

Claim 2 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Chiu in view of Kobayashi and Hong.

Reference is made to the final rejection (paper number 17), the brief (paper number 21) and the answer (paper number 22) for the respective positions of the appellants and the examiner.

OPINION

We have carefully considered the entire record before us, and we will reverse the obviousness rejection of claims 1 through 5.

According to the examiner (final rejection, page 3):

> Chiu et al. discloses a multicolor projection arrangement comprising light integration means (56), a polarizing beam splitter, and a color separation prism arrangement for directing light to plural reflective liquid crystal display panels. Film (40) acts as a polarization conversion system for converting the light from the source into passing light of a single polarization.
>
> Chiu et al. do not specify the use of an LCD with diffusive properties, such as a reflective polymer dispersed liquid crystal (PDLC) panel.
>
> Kobayashi et al. teach a reflective polymer dispersed liquid crystal display system wherein a quarter wave plate (3108) is positioned between a light entrance side of the display and a reflective portion (3109) of the display pixels (See Figure 34A).
>
> It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Chiu et al. by the use of known types of reflective modulators, such as a PDLC display as taught by Kobayashi et al. In [sic, in] order to obtain enhanced contrast in a projection system.

In the PDLC display disclosed by Kobayashi (Figure 34A), the quarter-wave plate 3108 is located between the display panel and a reflector plate 3109. The reflector plate 3109 is an aluminum reflector layer that is deposited onto a surface of quarter-wave plate 3108 (column 46, lines 48 through 55). Although Chiu, like Kobayashi, uses a quarter-wave plate, Chiu arranges the quarter wave plate 48 between the polarizing beam splitter 22 and the projection lens 38 (column 4, lines 56 through 67).

Appellants argue (brief, page 8) that:

> The projection display system of the Chiu et al. patent differs from the projection display system defined by Claim 1 in the failure to teach, or even suggest two essential elements of the claimed system. These are a modulating system having a liquid crystalline reflective image display panel having pixels having reflective portions and portions which can be switched between a transparent state and a

> diffusing state and a quarter-wave plate arranged between the reflective portions of the pixels and a polarizing beam splitter . . . .

Appellants go on to explain (brief, pages 9 and 10) that:

> The portion of the Kobayashi et al. patent relied on by the Examiner, Fig 34A (described on column 46, line 56-column 47, line 1) does not show a liquid crystalline display panel having pixels having reflective portions and portions which can be switched between a transparent state and a diffusing state.
>
> As shown in column 46, line 56-column 47, line 1 of the Kobayashi et al[.] patent[,] the pixel shown in Fig 34A has a portion which can be switched between a transparent state and a diffusing state but does not have a reflective portion.
>
> Reflector plate 3109, is not a portion of the pixel but is separated from the pixel by quarter-wave plate 3108.
>
> Additionally, the Kobayashi et al. patent does not show a polarizing beam splitter and therefore does not fill in the gap in the Chiu et al. patent regarding the presence of a quarter-wave plate between a polarizing beam splitter and the reflective portions of the pixels of the display panel.

We agree with appellants' arguments. The applied references neither teach nor would they have suggested to one of ordinary skill in the art the specifically claimed placement of the quarter-wave plate between the polarizing beam splitter and the reflective portions of the pixels of the reflecting image display panel. Thus, the obviousness rejection of claims 1 and 3 through 5 is reversed.

The obviousness rejection of claim 2 is reversed because the teachings of Hong[1] do not cure the noted shortcomings in the teachings of Chiu and Kobayashi.

DECISION

The decision of the examiner rejecting claims 1 through 5 under 35 U.S.C. § 103(a) is reversed.

REVERSED

KENNETH W. HAIRSTON Administrative Patent Judge	)
ERROL A. KRASS Administrative Patent Judge	) BOARD OF PATENT) APPEALS) AND) INTERFERENCES
JERRY SMITH Administrative Patent Judge	)

KWH/lp

[1] Hong discloses (Figure 2) an image projection system with a quarter-wave plate 35 or 36 arranged between the reflective portions of a liquid crystalline display 37 or 38 and the polarizing beam splitter 32. Hong, however, lacks a color-separating prism system as set forth in the claims on appeal.

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APPEAL NO. 2001-1116

APPLICATION NO. 09/070,222

APJ HAIRSTON

APJ SMITH, JERRY

APJ KRASS

DECISION: **REVERSED**

PREPARED: Aug 6, 2003

OB/HD

PALM

ACTS 2

DISK (FOIA)

REPORT

BOOK