

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte LAWSON A. WOOD

Appeal No. 1998-2570
Application No. 08/381,156

ON BRIEF

Before THOMAS, RUGGIERO, and BLANKENSHIP, Administrative Patent Judges.

RUGGIERO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal from the final rejection of claims 13-19. Claims 2-4 have been canceled, and claims 1, 5-12, and 20-50 have been allowed. An amendment filed August 7, 1997 after final rejection was denied entry by the Examiner.

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The claimed invention relates to a display apparatus employing a digital micromirror device having an array of movable micromirrors. In one embodiment, a resetting operation to dislodge micromirrors that have become stuck is achieved by emitting current pulses through the micromirrors while exposing them to a magnetic field. In a variation of this embodiment, a voltage differential applied across piezoelectric material coated on electrodes beneath the mirrors is utilized to cause mechanical movement to dislodge stuck mirrors. In a further embodiment, an updating technique is employed which, instead of moving the micromirrors from a latched position to their updated states simultaneously, the micromirrors are updated on a row-by-row basis while being exposed steadily to light.

Claims 13 and 15 are illustrative of the invention and read as follows:

13. A display apparatus, comprising:

a digital micromirror device having an array of movable micromirrors;

resetting means for dislodging any micromirrors that become stuck, the resetting means including means for exposing the array of micromirrors to a magnetic field and means for causing current to flow through the micromirrors; and

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15. A method of displaying a sequence of frames of video information on a digital micromirror device having an array of micromirrors that are disposed in rows and that are movable between a first position and a second position, the video information for a frame including a plurality of first multi-bit video words, each micromirror corresponding to one of the first multi-bit video words, each of the first multi-bit video words including at least a most significant bit and a least significant bit, comprising:

(a) moving micromirrors which correspond to first video words whose least significant bit has a predetermined value from their first positions to their second positions, the micromirrors of a first one of the rows being moved before the micromirrors of a last one of the rows;

(b) returning the micromirrors that were moved during step (a) to their first positions, the micromirrors of the first row being returned before the micromirrors of the last row; and

(c) steadily exposing the micromirrors to light at a first level while step (a) is conducted and while step (b) is conducted.

The Examiner relies on the following prior art:

Nathanson et al. (Nathanson)	3,896,338	Jul. 22, 1975
Schell	5,210,653	May 11, 1993
Sampsell	5,452,024	Sep. 19, 1995

(filed Nov. 01, 1993)

Claims 13 and 14 stand finally rejected under 35 U.S.C. § 103 as being unpatentable over Nathanson in view of Schell. Claims 15-17 stand finally rejected under 35 U.S.C. § 102(e)

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as being anticipated by Sampsell. Claims 18 and 19 stand finally rejected under 35 U.S.C. § 103 as being unpatentable over Sampsell in view of Schell.

Rather than reiterate the arguments of Appellant and the Examiner, reference is made to the Brief (Paper No. 17) and Answer (Paper No. 18) for the respective details.

OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the Examiner and the evidence of anticipation and obviousness relied upon by the Examiner as support for the rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, Appellant's arguments set forth in the Brief along with the Examiner's rationale in support of the rejections and arguments in rebuttal set forth in the Examiner's Answer.

It is our view, after consideration of the record before us, that the evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary

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skill in the art the obviousness of the invention as recited in claims 13, 14, 18, and 19. We are also of the view that the Sampsell reference does not fully meet the invention as set forth in claims 15-17. Accordingly, we reverse.¹

We consider first the Examiner's 35 U.S.C. § 103 rejection of claims 13 and 14 as being unpatentable over Nathanson in view of Schell. In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one

¹ We decline Appellant's request (Brief, page 11) to enter a new ground of rejection of claim 17 under 37 CFR § 1.196(b) since, in our view, Appellant has not provided sufficient reasons for us to do so. We would point out, however, that, in view of our decision in this appeal, the Examiner may wish to reconsider the decision not to enter the amendment after final filed August 7, 1997 (Paper No. 12)

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having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the Examiner are an essential part

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of complying with the burden of presenting a prima facie case
of

obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24
USPQ2d

1443, 1444 (Fed. Cir. 1992).

With respect to independent claim 13, the Examiner proposes to modify the video display system disclosure of Nathanson. According to the Examiner (Answer, page 4), Nathanson discloses the claimed invention except for the feature of utilizing magnetic fields or piezoelectric material for resetting any movable mirror display elements which may have become stuck. To address this deficiency, the Examiner turns to the Schell reference which describes the use of magnetostrictive and piezoelectric actuators to change the configuration of deformable mirror faceplates. In the Examiner's line of reasoning, the skilled artisan would have been motivated and found it obvious to have modified Nathanson's device with the deformable mirror configuration teachings of Schell "...because using magnetic field and piezoelectric material is one of the way [sic, ways] to control the deflection of the mirrors." (Answer, page 4).

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In response, Appellant asserts several arguments (Brief, pages 7-9) in support of the position that the Examiner has not established proper motivation for the proposed combination of references so as to set forth a prima facie case of obviousness. After careful review of the applied prior art in light of the arguments of record, we are in agreement with Appellant's position as stated in the Brief. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992).

It is our view that, while a showing of proper motivation does not require that a combination of prior art teachings be made for the same reason as Appellant to achieve the claimed invention, we can find no motivation for the skilled artisan to apply the deformable faceplate configuration teachings of Schell to the micromirror device of Nathanson. There is nothing in the disclosure of Nathanson to indicate that the correction of phase errors or perturbations in an impinging light beam wavefront to produce an undistorted image, the

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problem addressed by Schell, was ever a concern. It is our opinion that the only basis for applying the teachings of Schell to the micromirror structure of Nathanson comes from an improper attempt to reconstruct Appellant's invention in hindsight. Accordingly, since the Examiner has not established a prima facie case of obviousness, the rejection of independent claim 13 and claim 14 dependent thereon, over the combination of Nathanson and Schell is not sustained.

Turning to a consideration of the Examiner's 35 U.S.C. § 102(e) rejection of claims 15-17 as being anticipated by Sampsell, we do not sustain this rejection as well. Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir.); cert. dismissed, 468 U.S. 1228 (1984); W.L. Gore and Associates, Inc. v. Garlock, Inc., 721 F.2d 1540,

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1554, 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469
U.S. 851 (1984).

With respect to independent claim 15, the Examiner attempts to read the claimed limitations on the disclosure of Sampsell. In particular, the Examiner points to Sampsell's description at column 8, line 3 to column 9, line 12 of the operation illustrated in Figure 3 as disclosing the claimed mirror positioning feature.

After reviewing Appellant's arguments in response (Brief, pages 10 and 11), we are in agreement with Appellants' position as stated in the Brief. Our interpretation of the disclosure of Sampsell coincides with that of Appellant, i.e. Sampsell's micromirrors are returned to their original positions only when there is a change in bit value from one bit to the next. As pointed out by Appellant, if the bit values in Sampsell stay at the same level, the micromirrors will stay in the same position as the processing continues from a lesser significant bit to the next lesser significant bit (e.g. region 306b illustrated in Sampsell's Figure 3). Sampsell's micromirrors are returned to their original position only when the next lesser significant bit has a

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change in bit value (e.g. the "OFF" period after region 306b in Figure 3 representing a bit value change from a "1" to a "0").

We agree with Appellant that this disclosed operation of Sampsell does not meet the requirements set forth in step (b) of claim 15 when it is read in conjunction with step (a) of the claim. In our view, the limitations of appealed claim 15 require the returning of the micromirrors to their original position during the processing of each bit position. In other words, if a micromirror is moved to an "ON" position during the processing of the least significant bit having a value of "1", the micromirror will then be returned to the "OFF" position during the processing of this same least significant bit and regardless of the bit value of the next bit. This is unlike the operation described in Sampsell in which the micromirrors are returned to their original position only if the bit value changes from one bit position to the next.

In view of the above discussion, it is our opinion that, since all of the claim limitations are not present in the disclosure of Sampsell, we do not sustain the Examiner's 35 U.S.C. § 102(e) rejection of independent claim 15, nor of claims 16 and 17 dependent thereon.

Lastly, we also do not sustain the Examiner's obviousness rejection of claims 18 and 19 which add the previously

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discussed stuck mirror feature to the micromirror positioning operation set forth in independent claim 15. As with rejection of claims 13 and 14 discussed supra with respect to the Nathanson reference, the Examiner has proposed a modification of Sampsell with the deformable faceplate configuration teachings of Schell. Notwithstanding the fact that we find a similar lack of establishment by the Examiner of proper motivation for combining Schell with Sampsell as we did in the proposed combination with Nathanson, we also find no disclosure in Schell which would overcome the innate deficiencies discussed above with regard to Sampsell. Since all of the claim limitations are not taught or

suggested by the applied prior art, it is our opinion that the Examiner has not established a prima facie case of obviousness with respect to appealed claims 18 and 19.

In summary, we have not sustained any of the Examiner's rejections of the claims on appeal. Therefore, the decision of the Examiner rejecting claims 13-19 is reversed.

REVERSED

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Administrative Patent Judge)	
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)	BOARD OF PATENT
JOSEPH F. RUGGIERO)	APPEALS
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DECISION: REVERSED
Send Reference(s): Yes No
or Translation (s)
Panel Change: Yes No
Index Sheet-2901 Rejection(s):

Prepared: March 28, 2002

Draft Final

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PALM / ACTS 2 / BOOK
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