

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SHINICHI YOTSUYA,
KAZUSHIGE UMETSU and
DAISUKE SAWAKI

Appeal 2007-2667
Application 10/412,323
Technology Center 1700

Decided: November 20, 2007

Before EDWARD C. KIMLIN, CHUNG K. PAK, and
LINDA M. GAUDETTE, *Administrative Patent Judges*.

KIMLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-8.

Claim 1 is illustrative:

1. A method of manufacturing a mask including formation of a plurality of penetrating holes in a substrate, each of the penetrating holes connecting one of first openings and one of second openings that are larger than the first openings respectively, the method comprising:

- (a) forming an etching resistant film on a first surface of the substrate avoiding areas in which the first openings will be formed, and exposing regions in each of which two or more of the penetrating holes will be formed in a second surface of the substrate opposite to the first surface so as to continuously expose areas for forming two or more of the second openings in each of the regions;
- (b) forming smaller holes than the penetrating holes at positions in which the penetrating holes will be formed; and
- (c) etching the first and second surfaces of the substrate with crystal orientation dependence.

The Examiner relies upon the following references in the rejection of the appealed claims:

Drake	4,961,821	Oct. 9, 1990
Nakasuji	6,059,981	May 9, 2000
Beatty	6,365,058 B1	Apr. 2, 2002
Yotsuya	6,893,575 B2	May 17, 2005

Appellants' claimed invention is directed to a method of manufacturing a mask by forming a plurality of holes in a substrate. First and second openings are formed on opposite surfaces of the substrate with the second openings being larger than the first openings. The first and second openings are formed by using an etching resistant film on both surfaces of the substrate, and during formation of the second openings a portion of the surface is not covered with etch resistant film, i.e., the so-called "exposing regions" in claim 1, paragraph (a). The appealed claims require exposing regions of the second surface of the substrate in which at least two of the larger, second openings are formed such that these regions are not covered with etching resistant film.

Appealed claims 1, 4, 5, 7, and 8 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Nakasuji. Claims 1, 2, 4, 5, 7, and 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Drake. Claims 3 and 6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Drake in view of Beatty. In addition, claims 1 and 4 stand rejected under the judicially created doctrine of obviousness-type double patenting over claim 1 of the patent to Yotsuya.

We have thoroughly reviewed the respective position advanced by the Appellants and the Examiner. In so doing, we find that we cannot sustain the Examiner's rejections.

We consider first the Examiner's rejection under § 102 over Nakasuji. Appellants urge that Nakasuji does not describe within the meaning of § 102 the claimed step of "exposing regions in each of which two or more of the penetrating holes would be formed in a second surface of the substrate opposite to the first surface so as to continuously expose areas for forming two or more of the second openings in each of the regions." The Examiner states that "Nakasuji also teaches that exposing regions in each of which two or more openings are formed ..." and cites Figures 5(b) and 6(c) of the reference. The Examiner offers no further commentary or explanation how the reference figures can be interpreted to meet the argued claim limitation. However, our review of Nakasuji brings us in agreement with Appellants that the reference does not describe an exposed region for forming two or more of the second openings that are larger than the first openings. Looking at Figure 6(c) of Nakasuji, it can be seen that area 33 exposes two or more openings on the upper surface of layer P, but these openings are not larger than the openings on the opposite surface of layer P. On the other hand, the

exposed regions on the opposite or bottom surface of layer P expose only singular apertures. Hence, we cannot agree with the Examiner that Nakasui meets every limitation of claim 1 on appeal.

The Examiner's § 103 rejection over Drake has the same deficiency discussed above, i.e., Drake provides no teaching or suggestion of the claim 1 (a) recitation "exposing regions in each of which two or more of the penetrating holes will be formed in a second surface of the substrate" The Examiner maintains that although Drake does not explicitly teach the claim limitation the reference does "teach exposing at least two areas in both the first and second surface of the substrate in order to continuously form at least two penetration holes in the substrate," referencing Figures 10A – 10C (Ans. 4, penultimate para.). However, the Examiner confuses Drake's continuous formation of at least two holes with the claim requirement for a continuously exposed area for forming two or more of the second openings. While Figures 10A – 10C of Drake depict two through holes, the figures do not depict an exposed area of substrate devoid of etching resistant film over a surface in which two or more second openings are formed.

As for the rejection of claims 3 and 6 under § 103 over Drake in view of Beatty, Beatty does not remedy the deficiency of Drake outlined above.

We will also not sustain the Examiner's obviousness-type double patenting rejection of claims 1 and 4 over claim 1 of U.S. '575. While we agree with the Examiner that claim 1 of the patent expressly recites that "the second openings are smaller than the first openings," we concur with Appellants that the "patent fails to disclose forming an etching resistant film 'so as to *continuously expose areas* for forming two or more of the second openings in each of the regions,' as recited in claim 1" (Br. 9, para. 4). The

Appeal 2007-2667
Application 10/412,323

Examiner does not address this argued limitation and fails to meet the burden of establishing why such a claimed feature would have been obvious to one of ordinary skill in the art within the meaning of § 103. Manifestly, this constitutes reversible error.

In conclusion, based on the foregoing, we are constrained to reverse the Examiner's rejections.

REVERSED

cam

OLIFF & BERRIDGE, PLC
P O BOX 320850
ALEXANDRIA, VA 22320-4850