Paper No. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ROXY N. FAN

Appeal No. 1997-3649
Application No. 08/432,450

HEARD: JANUARY 10, 2001

Before GARRIS, OWENS, and TIMM, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1-10, 22 and 23. The only other remaining claims, claims 11-21, were withdrawn pursuant to a restriction requirement.

BACKGROUND

Appellant's invention relates to a photosensitive element. At a simplified level, the photosensitive element comprises a support, a layer of a photopolymerizable material on the support, and an infrared ablation layer in direct contact with the photopolymerizable layer. The photosensitive element is used to form a photopolymer printing plate. In order to make the printing plate, the infrared ablation layer is laser ablated to remove selected portions of that layer from above the photopolymerizable layer creating a mask. Upon exposure to actinic radiation, the unmasked photopolymerizable material polymerizes while the masked portions remain unpolymerized. Treatment with a suitable solvent removes the mask and the unpolymerized portions of the photopolymerizable layer below the mask leaving a printing relief of photopolymerized material on the support which can be used for flexographic printing. See the specification at page 1 and page 22. Claim 1 is illustrative of the photosensitive element:

> 1. A photosensitive element for use as a photopolymer printing plate comprising:
>
> (a) a support;
>
> (b) at least one layer of a photopolymerizable material on the support, the photopolymerizable material comprising at least one elastomeric binder, at least one monomer, at least one initiator having sensitivity to non-infrared actinic radiation, and optionally at least one plasticizer, wherein at least one of the monomer and the optional plasticizer is a low molecular weight material having a weight average molecular weight of 30,000 or less; and
>
> (c) at least one infrared ablation layer which is ablatable by infrared radiation and opaque to non-infrared actinic radiation and wherein the infrared ablation layer is in direct contact with the at least one photopolymerizable layer

(b), and has a surface opposite the photopolymerizable layer (b) capable of being exposed to laser ablation, the infrared ablation layer comprising:

(i) at least one infrared absorbing material;

(ii) a radiation opaque material, wherein (i) and (ii) can be the same or different; and

(iii) at least one binder which is incompatible or substantially incompatible with at least one of the low molecular weight materials of layer (b);

wherein the infrared ablation layer is tack-free or substantially tack-free such that the surface of the infrared sensitive layer adjacent to the photopolymerizable layer is tack-free or only slightly tacky, sticky or oily to the touch and is ablatable from the surface of the photopolymerizable layer upon exposure to infrared laser radiation.

The examiner relied upon the following references:

Fan	5,262,275	Nov. 16, 1993
Fan et al. (Published World Intell. Prop. Org. Application)	WO 94/03839	Feb. 17, 1994

Claims 1-10, 22, and 23 stand rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over either Fan et al. We reverse both of these rejections for the reasons that follow.

OPINION

The rejection over Fan et al.

Fan et al. describes a photosensitive element comprising a support, a photosensitive layer and an infrared radiation sensitive layer (pages 3-4). The infrared sensitive layer is interposed between a

coversheet and the photosensitive layer or between a cover sheet and a barrier layer (page 6, lines 10-14). While the cover sheet is still in place, the element is exposed to infrared laser radiation in selected areas. The infrared radiation changes the adhesion affinity of the irradiated portions of the infrared sensitive layer so that when the cover sheet is pulled off portions of the infrared sensitive layer are also pulled off (pages 6-8). The portions of the infrared sensitive layer remaining are then used to mask selected portions of the photopolymerizable layer from actinic radiation exposure during printing plate manufacture (pages 8-10).

Claim 1 requires that the infrared ablation layer be ablatable by infrared radiation and be "capable of being exposed to laser ablation". The Examiner states that the infrared layer of Fan et al. contains the same components as the infrared layer of Appellant, i.e. IR absorber, radiation opaque material and the same binders, so it is inherently laser ablatable (Answer, page 6). However, the Examiner has not taken into account the environment in which the infrared sensitive layer is used in the process of Fan et al. In the process of Fan et al. laser radiation does not remove material but changes the adhesion affinity between layers. The presence of the cover layer is necessary to facilitate the removal of the selected portions of the irradiated infrared sensitive layer bonded thereto. The mask of Fan et al. cannot be made without the presence of the cover sheet. Therefore, the cover layer must be in place during laser irradiation of the photosensitive element. However, the cover sheet of Fan et al. would reasonably seem to prevent laser ablation as laser ablation requires material of the ablated layer

to be capable of being vaporized and/or carried away from the surface. Therefore, before removal of the cover sheet, the infrared sensitive layer of Fan et al. does not reasonably appear to be ablatable. Once the cover sheet is removed, a portion of the infrared sensitive layer is also removed and thus what is left is not a "layer" within the context of this invention. Therefore, we cannot agree that it is reasonable to find that the infrared sensitive layer of Fan et al. is inherently capable of being laser ablated. Therefore, the Examiner has not established a *prima facie* case of unpatentability over Fan et al.

Rejection over Fan

"A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field." *In re Kotzab*, 217 F.3d 1365, 1369, 55 USPQ2d 1313, 1316 (Fed. Cir. 2000). "The invention must be viewed not with the blueprint drawn by the inventor, but in the state of the art that existed at the time." *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) (quoting *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1138, 227 USPQ 543, 547 (Fed. Cir. 1985)). To establish a *prima facie* case of obviousness, "there must be some teaching, suggestion or motivation in the prior art to make the specific combination that was made by the applicant."

In re Dance, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998). "In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed." *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1458 (Fed. Cir. 1998).

Fan describes a photosensitive printing element comprising a support, a photopolymerizable layer and an infrared radiation sensitive layer which is infrared ablatable. However, Fan specifically describes positioning a barrier layer between the photopolymerizable layer and infrared radiation sensitive layer. It is the Examiner's position that Fan teaches or suggests elimination of the barrier layer or, in the alternative, that the barrier layer itself may be a photosensitive layer (Answer, pages 7-8).

Throughout Fan, the photosensitive element is characterized as including a barrier layer. See col. 2, lines 13-31; col. 2, lines 55-58; col. 4, lines 11-13, the examples, and claim 1. Fan never describes the barrier layer as optional. Furthermore, according to Fan, the barrier layer serves two important functions. It minimizes the migration of materials between the photopolymerizable layer and the infrared sensitive layer and it shields the photopolymerizable layer from atmospheric oxygen (col. 4, lines 13-25).

Coming to the conclusion that Fan teaches or suggests eliminating the barrier layer requires bridging several gaps in the path to the conclusion. Bridging those gaps requires knowledge of Appellant's solution. For instance, the Examiner states that the description in col. 4, lines 22-23 that "[i]f there is no compatibility between the two layers there will be no migration" amounts to a teaching that a barrier layer can be dispensed with if incompatibility exists between the monomer and infrared layer (Answer, page 7). While the statement linking compatibility between the layers and migration might lead one of ordinary skill in the art down the path of investigation, it does not directly teach how to obtain the desired incompatibility or indicate that the desired incompatibility would be obtained if only the binder, an optional material in the infrared sensitive layer of Fan, were selected to be incompatible with the monomer in the photopolymerizable layer. The general disclosure must do more than lead one of ordinary skill in the art down the path of investigation, it must contain a sufficient teaching of how to obtain the desired result or must indicate that the claimed result would be obtained if certain directions were pursued. *See The Gillette Co. v. S.C. Johnson & Son Inc.*, 919 F.2d 720, 725, 16 USPQ2d 1923, 1928 (Fed. Cir. 1990) (quoting *In re Eli Lilly & Co.*, 902 F.2d 943, 945, 14 USPQ2d 1741, 1743 (Fed. Cir. 1990)).

Furthermore, even if it were obvious to do all the picking and choosing necessary to result in a photopolymerizable barrier layer containing a monomer and an infrared sensitive layer with incompatible binder, there would still be the problem of shielding the photopolymerizable layer from atmospheric

oxygen. The Examiner indicates that Fan discloses that the effect of atmospheric oxygen can be overcome by longer radiation exposure times or higher intensity radiation sources. However, Fan also indicates that the results are less reproducible when oxygen is present. One would not desire to form a less reproducible printing plate when a barrier layer can be used which remedies that problem and other problems too. The fact remains that Fan expressly requires a barrier layer in every embodiment of the photosensitive element, there is no suggestion in Fan for eliminating the barrier layer, and Fan teaches away from such elimination.

Next we turn to the Examiner's alternative position that the barrier layer may itself be photopolymerizable. We note that claim 1 requires the photopolymerizable layer not only contain elastomeric binder, monomer and initiator, but it also requires that the monomer, or a plasticizer if present, have a weight average molecular weight of 30,000 or less. In addition, we note that the infrared sensitive layer of the claim is required to contain a binder which is incompatible or substantially incompatible with the low molecular weight materials in the photopolymerizable layer.

In Fan, two types of barrier layers are described as useful. The first type is insensitive to actinic radiation (col. 4, lines 54-55). The second type is photosensitive and is usually a layer of an elastomeric composition (col. 5, lines 15-19). The elastomeric composition can consist simply of a nonphotosensitive elastomeric binder layer similar to the binder in the photopolymerizable layer or it can contain an elastomeric binder, monomer and initiator (col. 5, lines 19-23). Fan is silent as to the

molecular weight of the monomer or any plasticizer which might be present. A preferred barrier layer contains two elastomeric binders and optionally nonmigratory dye or pigment (col. 5, lines 24-25).

In order to achieve the here claimed subject matter one of ordinary skill in the art first would have had to choose the photopolymerizable barrier material over the nonphotopolymerizable barrier material. Then one of ordinary skill in the art would have had to choose between the photosensitive barrier composition consisting simply of elastomeric binder and the composition including monomer and initiator. But these are not the only necessary choices that must be made.

In order to arrive at the claimed photosensitive element several further choices are required. A monomer that would not migrate but was under 30,000 weight average molecular weight must be chosen. Further, in the infrared layer, one must choose to use a binder, an optional component according to Fan. Further, that binder must be selected to be incompatible with the monomer included in the barrier layer. Fan provides insufficient guidance as to how to make these further choices. This is true especially in light of the fact that the function of the barrier layer as described in Fan is to prevent migration of monomers and plasticizers and, on its face, this function teaches away from using a low molecular weight monomer in the barrier layer. While, after knowing the direction in which the inventor proceeded, the invention may seem like a logical step forward, it cannot be said to have been obvious based solely on the information known prior to the invention. We conclude that the Examiner

has not established a *prima facie* case of either anticipation or obviousness with respect to the subject matter of claims.

CONCLUSION

To summarize, the decision of the Examiner to reject claims 1-10, 22, and 23 under 35 U.S.C. § 102(b) and § 103 is reversed.

REVERSED

BRADLEY R. GARRIS Administrative Patent Judge	)
TERRY J. OWENS Administrative Patent Judge	) BOARD OF PATENT) APPEALS) AND) INTERFERENCES
CATHERINE TIMM Administrative Patent Judge	)

CT/sld

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APPEAL NO. 1997-3649 - JUDGE TIMM
APPLICATION NO. 08/432,450

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DECISION: **REVERSED**

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DRAFT TYPED: 03 Jul 01

FINAL TYPED: