

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(2) is not binding precedent of the Board.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. 30

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ANTOINE CORBIN, PHILLIPPE DEMONCY,
JACQUES FOULU and PIERRE SUDRAUD

Appeal No. 96-3293
Application 08/261,645¹

ON BRIEF

Before THOMAS, MARTIN, and JERRY SMITH, Administrative Patent
Judges.

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134
from the examiner's rejection of claims 1-5, 7, 8, 10-22, 25-

¹ Application for patent filed June 17, 1994.

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27 and 37, which constitute all the claims remaining in the application. An amendment after final rejection was filed on January 18, 1996 but was denied entry by the examiner. Additional amendments after appeal were filed on July 19, 1996, August 22, 1996 and September 27, 1996. These amendments were all entered by the examiner.

The disclosed invention pertains to an apparatus for directly writing a pattern of a molten material onto the surface of a substrate. More particularly, the apparatus includes a tip means provided with an apex which is dipped into the molten material. The molten material nucleates about the tip means and flows to the apex of the tip means through the force of gravity. The tip means is then moved relative to the substrate to write a desired pattern onto the substrate.

Representative claim 1 is reproduced as follows:

1. An apparatus for direct writing a pattern of a material to be deposited onto the surface of a substrate comprising:

substrate support means for supporting the substrate;

tip means of a refractory metal provided with an apex for depositing material in its molted [sic] state on the surface of the substrate, wherein said molten material wets an outside surface of said tip means and nucleates, thereby

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providing a continuous flow of said molten material to said apex, said material being deposited on said substrate by gravity;

tip supporting means for maintaining the tip apex above said surface of the substrate at a predetermined distance therefrom;

supply means for feeding said tip means with a film of said material in the molten state;

heating means for maintaining said film above the melting temperature of said material; and

controlled drive means for producing a relative movement between said substrate and said tip means.

The examiner relies on the following references:

Krug	3,628,982	Dec. 21, 1971
Garrison	3,711,211	Jan. 16, 1973
Christensen	3,821,513	June 28, 1974
Leibovich et al. (Leibovich)	4,723,086	Feb. 02, 1988
Blette et al. (Blette)	5,186,982	Feb. 16, 1993

Claims 1-5, 7, 8, 10-22, 25-27 and 37 stand rejected under 35 U.S.C. § 103². As evidence of obviousness the

² Although claim 22 is listed by appellants as forming part of this appeal, none of the rejections set forth in the answer lists claim 22 as part of the rejection. In fact, claim 22 has not been rejected or indicated as being allowable since the first action on the merits using the presently applied references [rejection mailed May 30, 1995]. Since appellants do not separately argue the patentability of claim

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examiner offers the basic combination of Blette in view of Krug with respect to claims 1-4, 7, 10-12, 16-21, 25-27 and 37. Garrison is added to the basic combination with respect to claim 8, Leibovich is added to the basic combination with respect to claims 13-15, and Christensen is added to the basic combination with respect to claim 5. Rejections of claims 3 and 7 under 35 U.S.C. § 112 set forth as new rejections in the answer appear to have been overcome by the three amendments filed after the examiner's answer.

Rather than repeat the arguments of appellants or the examiner, we make reference to the briefs and the answer for the respective details thereof.

OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the examiner and the evidence of obviousness relied upon by the examiner as support for the rejections. We have, likewise, reviewed and taken

22, we will treat appealed claim 22 as standing or falling with independent claim 1.

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into consideration, in reaching our decision, the appellants' arguments set forth in the briefs 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 skill in the art the obviousness of the invention as set forth in claims 1-5, 7, 8, 10-22, 25-27 and 37. Accordingly, we reverse.

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 (CCPA 1966), and to provide a reason why one 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

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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 Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part 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 1, the examiner finds that Blette basically teaches every feature of the claimed invention except for the presence of a heating means for maintaining molten material on the tip means. The examiner cites Krug as teaching this particular feature. According to the examiner, it would have been obvious to the artisan to add Krug's heating means to the Blette tool so as

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to maintain Blette's solder in a molten state as the tool is moved between the solder reservoir and the workpiece [final rejection, page 1].

Appellants make the following arguments [brief, pages 6-19]:

1. Blette cannot form a continuous line of molten metal;
2. Blette is not adapted to work in the micronic range;
3. Krug does not provide an in-situ reservoir;
4. The references do not teach the molten material nucleating from the exterior surface of the tip to form a drop that gravitates towards the apex of the tip by gravitational action;
5. The references do not teach that the apex of the tip does not touch the substrate to form a continuous line on the substrate;
6. The references do not teach the molten material wetting the exterior surface of the tip; and
7. The references do not teach providing a continuous

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flow of molten material to the tip means for depositing patterns on a substrate.

Although the examiner is correct to note that many of these arguments are either incorrect or not commensurate in scope with the claimed invention, we will limit our consideration to the arguments which address the recitation in claim 1 that a pattern is written and that "molten material wets an outside surface of said tip means and nucleates, thereby providing a continuous flow of said molten material to said apex, said material being deposited on said substrate by gravity." Since we agree with appellants that the collective teachings of Blette and Krug do not suggest these features of independent claim 1, we need not consider the other arguments of appellants and the examiner.

Blette discloses that it was known in the art to dip a pin into molten solder and remove the pin so that a drop of solder remains on the end of the pin. This drop is then brought into contact with a workpiece which causes part of the drop to adhere to the workpiece while a portion of the drop remains on the end of the pin [column 1, lines 44-60]. Blette admits that he does not know precisely how this transfer of

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solder takes place but that it is related to "capillary attraction or surface energy phenomena, physical attraction, chemical attraction or a combination of such" [column 5, lines 32-34].

Blette's invention does not use the dipping principle at all. Blette uses a source of molten solder which is forced into a tool using pressure. A single drop of solder is forced into the tool with each cycle of a piston. The drop of solder in the tool is then forced from the tool onto the workpiece also by the application of pressure. Blette specifically teaches that gravity alone will not deposit the molten material onto the workpiece [column 4, lines 15-21]. Thus, Blette teaches the application of a drop of solder onto a workpiece by forcing the solder from the end of the tool.

The flow of molten material in Blette clearly does not wet the outside surface of the tool, does not nucleate, does not write a pattern within each cycle of operation, and does not form a continuous flow of the molten material to the apex of the tool for depositing of the molten material by gravity. The examiner's argument that the physical principles and forces in Blette include gravity [answer, page 6] is not

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supported anywhere within the teachings of Blette. The forces referred to by Blette such as capillary attraction, surface energy phenomena, physical attraction or chemical attraction do not suggest the presence of gravitational forces as argued by the examiner. In fact, Blette makes it relatively clear that gravity plays no significant role in depositing the solder onto the workpiece. The solder must be brought into physical contact with the workpiece to effect the transfer. Blette can hold the drop of solder vertically above the workpiece and gravity will not cause the drop of solder to fall on the workpiece as Blette specifically discloses.

Since Blette can only deposit a single drop of solder with each movement of pin 22, there is no continuous flow of molten material to the apex of the tool. Molten material must be forced into passageway 16 with each cycle of the pin 22. Therefore, Blette does not form a pattern with a continuous flow of molten material because only one dot of solder is available as part of a single continuous flow. Thus, Blette works completely differently from the claimed invention and does not suggest the elements of the tip means as recited in independent claim 1. Krug is cited only for the

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heating means of claim 1 and does not overcome the deficiencies in Blette as a primary reference. All the remaining claims depend from and incorporate the limitations of claim 1. Although the examiner adds Garrison, Leibovich or Christensen with respect to some of the dependent claims, neither of these references overcomes the basic deficiencies in the Blette reference. Therefore, none of the rejections as set forth by the examiner can be sustained.

The decision of the examiner rejecting claims 1-5, 7, 8, 10-22, 25-27 and 37 is reversed.

REVERSED

James D. Thomas)
Administrative Patent Judge)
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) BOARD OF PATENT
John C. Martin)
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