UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KLAUS KEITE-TELGENBUSCHER
PETER JAUCHEN and MICHAEL ZSCHAECK

Appeal No. 2004-2196
Application 09/902,055

ON BRIEF

Before KIMLIN, WARREN and OWENS, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

Decision on Appeal

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner finally rejecting claims 1 and 3 through 19, all of the claims in the application.

Claim 1 illustrates appellants' invention of a method of applying liquid or pasty substances to a backing material by means of a die, and is representative of the claims on appeal:

1. A method of applying liquid or pasty substances to a backing material, the substance being applied by means of a die at least partly to the backing material traveling along the die, wherein,

- the die has at least two zones temperature-controlled differently in its cross section and/or along its longitudinal axis;
- the die body is bent transversely to the direction of travel of the backing material and
- the bending is induced by temperature differences within the die body.

The references relied on by the examiner are:

Ludwig	5,122,219	Jun. 16, 1992
Moriarity	6,273,701	Aug. 14, 2001 (filed Mar. 19, 1999)
Bayer et al. (Bayer)	0 622 127	Nov. 2, 1994 (published European Patent Application)

The examiner has rejected appealed claims 1 and 3 through 19 under 35 U.S.C. § 103(a) as being unpatentable over Ludwig in view of Moriarity (answer, pages 3-6), and appealed claims 1, 3 through 7 and 9 through 19 under 35 U.S.C. § 103(a) as being unpatentable over Bayer in view of Moriarity (answer, pages 6-9).

Appellants state that the appealed claims "1, 7, 8 and 11-16 stand or fall together. Claims 3-6, 9, 10 and 17-19 can be treated separately on the merits should the rejection of claim 1 be maintained" (brief, page 2). The examiner does not agree because "neither the Grouping of Claims or the Arguments section of the Appeal Brief provide arguments as to why claims 3-6, 9, 10, 17-19 should specifically be treated separately or arguments as to why these claims are separately patentable" (answer, pages 2-3). In any event, in the answer (e.g., pages 5-6 and 15-17), the examiner considers claims 3 through 6, 9, 10 and 17 through 19 and responds to appellants' argument with respect to the limitations in these claims in the brief (e.g., pages 5-7). Thus, we decide this appeal based on appealed claims 1, 3 through 6, 9, 10 and 17 through 19 to the extent argued in the brief. 37 CFR § 1.192(c)(7) (2003); *see also* 37 CFR § 41.37(c)(1)(vii) (effective September 13, 2003; 69 Fed. Reg. 49960 (August 12, 2004); 1286 Off. Gaz. Pat. Office 21 (September 7, 2004)).

We affirm.

Rather than reiterate the respective positions advanced by the examiner and appellants, we refer to the answer and to the brief and reply brief for a complete exposition thereof.

Opinion

We have carefully reviewed the record on this appeal and based thereon find ourselves in agreement with the supported position advanced by the examiner (answer, pages 3-26) that, *prima facie*, the claimed method of applying liquid or pasty substances to a backing material by means of a die encompassed by appealed claim 1, 3 through 6, 9, 10 and 17 through 19 would have been obvious over the of teachings of Ludwig or Bayer as combined with the teachings of

Moriarity in the grounds of rejection, to one of ordinary skill in this art at the time the claimed invention was made.

Accordingly, since a *prima facie* case of obviousness has been established by the examiner, we have again evaluated all of the evidence of obviousness and nonobviousness based on the record as a whole, giving due consideration to the weight of appellants' arguments and the evidence in the submitted affidavit. *See generally, In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984).

The principal issues in this appeal are whether Moriarity would have disclosed to one of ordinary skill in this art a die meeting the limitations of appealed claim 1, and if so, whether the combined teachings of Ludwig and Moriarity and of Bayer and Moriarity would have suggested to one of ordinary skill in this art to use the die lip controls taught by Moriarity in the processes of either or both of Ludwig and Bayer with a reasonable expectation of success.

With respect to the teachings of Moriarity, appellants submit that this combination does not satisfy the claim limitations "the die body is bent transversely to the direction of travel of the backing material and the bending is induced by temperature differences within the die body" in appealed claim 1 (brief, page 3). Appellants point to the teaching at col. 6, ll. 24-61, and **FIGS. 2-3** of Moriarity (brief, pages 3-4), relied on by the examiner in the answer as establishing that "[t]he die lip, which is an integral part of the die body is flexed (i.e., bent) transversely to the direction of travel of the roll in multiple zones across the elongated portion (the longitudinal direction) of the die – thus providing the bend of the die body . . . [that] can be induced by temperature differences within the die body that come from multiple, separately controllable heaters embedded within the die body" (answer, page 4). Appellants argue that in the cited passage, "Moriarity makes no such assertion that flexing is equivalent to bending as is being asserted by the examiner and does not indicate that the *die body itself* changes in any way" (brief, page 4; bold portion of emphasis in original deleted). Appellants then contend that

> Moriarity wishes to increase to [*sic*, the] rate of polymer flow through their dies and accomplishes this by widening the size of their exit opening 126 by controlling the temperature in the lip 114. Moriarity never characterizes this widening as being equivalent to "the die body being bent transversely to the direction of travel of the backing material." Moreover, all of these changes in the exit opening size occur *within*

> the die 110 itself. There is no teaching or suggestion that the die body is bent transversely. Compare and contrast with appellants' Fig. 3 and 4 (see page 16, lines 10-21 of specification.)[.] [Brief, page 4; bold portion of emphasis in original deleted.]

With respect to combining Moriarty with Ludwig, appellants submit that "Ludwig teaches away from bending the die body" because "if Ludwig's die were bent in any way, the planar surface would not be uniform and as such Ludwig would not produce their desired uniform coating, i.e., Ludwig's principle of operation would be changed" (*id.*). Appellants point out that "Ludwig plainly shows that there is contact between the substrate and the perforated cylinder (die body) and contract [*sic*, contact] pressure roller at the time of coating (see e.g. Figure 1 of Ludwig) whereas Moriarity only shows contact between the substrate and the die body at the time of coating (see e.g., Figure 1 of Moriarity)" (*id.*). Appellants further contend that to the extent that the examiner relies on the intention of Ludwig and of Moriarity to provide uniform coatings as a basis to modify Ludwig with Moriarty to obtain such coatings, there is no factual basis in the references for the finding because Ludwig achieves a uniform coating with a coating head having a curved surface in contact with the under surface of the perforated cylinder, wherein the radius of the curved coating head is greater than the radius of the perforated cylinder, thus deforming the cylinder in the region of the coating slit in order to increase the contact time between substrate, perforated cylinder and contact pressure roller (*id.* pages 4-5).[1] Thus, appellants argue that the combination of Ludwig and Moriarity would not "allow Ludwig's invention to function as intended" (*id.*, page 5).

Appellants further point out that neither Ludwig or Moriarty teaches or suggestes "the desirability of having two temperature zones in the dies body and having the die body bent because of differences [*sic*, in] such temperatures" (*id.*, page 6).

With respect to combining Moriarty with Bayer, "appellants argue that this is a duplicative rejection" in which Bayer "is even further removed from appellants' invention than Ludwig as there is no recitation of a heating element much less multiple temperature zones as in the claimed invention" (*id.*, page 8).

[1] While appellants point to Ludwig's claim 1 in this respect, we note the disclosure at col. 3, ll. 27-37, of the reference.

The examiner responds that Moriarity teaches at col. 6, lines 24-61, and **FIGS. 2** and **3**, the limitations of appealed claim 1 at issue, pointing out in these respects the teaching at col. 6, ll. 44-61 (answer, page 11). With respect to this latter disclosure, the examiner explains that the same would have taught "rod heaters 136 and 138 which are embedded in the lip of [*sic*, the] die body . . . increase or decrease the lip temperature in various longitudinal zones . . . [that] increases the lateral fill in flow, which enables a higher pressure of polymer being extruded to act upon the opposing surfaces of the die lips 112 and 114 in the area of the higher temperature, causing a very slight additional flexure in the flexure zone 117 of the die lip 114 in the affected area to extrude more polymer therethrough" (*id.*, pages 11-12). The examiner thus finds that "as a result of the temperature changes in the die body (the heaters are embedded, and therefore, inside the die body), the die lip, which is an integral part of the die body, is flexed in zones across the lip" (*id.*, page 12). The examiner contends that "the common understanding of the meaning of the term flexing would be that the term means 'bending,'" and because "the die lip is an integral part of the die body, as shown by Figure 2, . . . a bending of a portion of the die lip is a bending of a portion of the die body" (*id.*). The examiner thus contends that Moriarity teaches the claim limitations "regardless of the actual terminology used to described these features, such as the term 'flexure' rather than 'bending'" (*id.*). The examiner submits that the "'transverse' component of the bending requirement" is shown by the combination of Ludwig and Moriarity, because the placement of the die "facing counterpressure roller 4" in Ludwig would result in "the bending of the lip in the various longitudinal zones . . . [being] perpendicular to the radius of the counterpressure roll" (*id.*).

The examiner further finds that Ludwig does not teach away from bending the die body as taught by Moriarty, because Ludwig discloses the requirements of the coating head and the counterpressure cylinder, and "[t]here is nothing in the teaching or requirements of Ludwig that would prevent there from being the slight flexure described at the lip area" of the die of Moriarty as "[b]oth references are concerned with extruding heated polymer materials from the slits of extrudes to provide uniform coating (*id.*, page 13). In this respect, the examiner finds that "[w]hile Ludwig provides a contact area between the coating head surface and the cylinder, there

is no requirement that this would prevent flexing of the die in a transverse action as claimed, since transverse action would occur perpendicular to the radius of the backing roll (*id.*).

The examiner maintains the position that the combination of Ludwig and Moriarty would have suggested using the thermal adjustment system of Moriarty in the die of Ludwig "because Ludwig teaches a system of coating by extruding heated coating material from a die, and Moriarty teaches a method of controlling extrudate dimensions when extruding heated coating material from a die using embedded electrical heating elements, which provide precise control of the die lip area" (*id.*, page 14). The examiner finds that this would result in "heating elements . . . provided across the lip area of Ludwig (at the outlet of the slit), resulting in a series of separately controlled temperature zones across the longitudinal axis of the die that flex the die transversely to and against the direction of travel of the backing material based on the different temperatures from the heating elements within the die body" (*id.*). The examiner further maintains that Moriarty would have taught the use of temperature zones and the "die body bending due to differences of temperature" (*id.*, pages 14-15).

The principal issues in this appeal and the arguments raised by the examiner and appellants require the interpretation of the terms of appealed claim 1. Indeed, in order to review the examiner's application of the combined teachings of Ludwig and Moriarity to appealed claim 1, we must first interpret the language thereof by giving the claim terms their broadest reasonable interpretation consistent with the written description provided in appellants' specification as it would be interpreted by one of ordinary skill in this art, without reading into these claims any limitation or particular embodiment which is disclosed in the specification. *See In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); *In re Zletz*, 893 F.2d 319**,** 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989); *In re Priest*, 582 F.2d 33, 37, 199 USPQ 11, 15 (CCPA 1978).

We determine that the plain language of appealed claim 1 requires that, *inter alia*, the at least two zones are temperature-controlled along its longitudinal axis, and includes within its scope any die having two or more areas along its longitudinal axis that are independently controlled with respect to temperature, the differences in temperature in at least two zones induces bending at least to some extent, however small, of any part, however small, of the die

body transversely to the direction of travel of the backing material. We further determine that preambular language of this claim permits claim 1 to include any manner of method of applying liquid or pasty substances to a backing material by means of a die at least partly to the backing material traveling along the die. *See generally, In re Fritch*, 972 F.2d 1260, 1262, 23 USPQ2d 1780, 1781 (Fed. Cir. 1992) (citing *Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 896, 221 USPQ 669, 675 (Fed. Cir.), *cert. denied*, 469 U.S. 857 [225 USPQ 792] (1984)); *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1257, 9 USPQ2d 1962, 1966 (Fed. Cir. 1989); *In re Stencel*, 828 F.2d 751, 754-55, 4 USPQ2d 1071, 1073 (Fed. Cir. 1987).

Contrary to appellants' arguments, we find no basis in the language of appealed claim 1 or in the written description of the specification on which to read into the language of this claim any limitations based on the figures and related disclosure of the specification, including the location of the temperature zones of the die or the manner or extent that the temperature differences between the zones induces bending of the die body. *See Morris*, *supra*; *Zletz*, *supra*; *Priest*, *supra*.

Thus, upon comparing the teachings of Moriarty with the language of appealed claim 1 as we have interpreted it above, we agree with the examiner that the die of Moriarty falls within the claim. This is because Moriarity would have disclosed to one of ordinary skill in this art that a die lip, which is a part of the die body, is flexed or bent by heating at least two different zones or positions by different rod heaters in those positions.[2] In this respect, we determine that the common, dictionary meaning of "flexure" or "flex" includes "bend" and "[t]o bend," respectively.[3] We particularly note the following disclosure in Moriarity relied on by the examiner:

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[2] It is well settled that a reference stands for all of the specific teachings thereof as well as the inferences one of ordinary skill in this art would have reasonably been expected to draw therefrom, see *Fritch*, 972 F.2d at 1264-65, 23 USPQ2d at 1782-83 (Fed. Cir. 1992); *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968), presuming skill on the part of this person. *In re Sovish*, 769 F.2d 738, 743, 226 USPQ 771, 774 (Fed. Cir. 1985).

[3] *See, e.g., The American Heritage Dictionary, Second College Edition* 512-13 (Boston, Houghton Mifflin Company, 1982).

> The rod heaters **136** and **138** increase or decrease the lip temperature in various longitudinal zones of the web **124** depending upon the signal transmitted based upon measuring the downstream gauge thickness of the extruded web **124**. By increasing the temperature, the lateral "fill in flow" is increased which enables a higher pressure of the polymer being extruded to act upon the opposing surfaces of the die lips **112** and **114** in the area of the higher temperature. This causes a very slight additional flexure in the flexure zone **117** of the die lip **114** in the affected area to extrude more polymer therethrough and thus increase the extruded web gauge. [Col. 6, ll. 46-58; *see also* Moriarity **FIGs. 2** and **3**.]

We further find that Moriarity would have disclosed that other types of heaters can be used in place of the rod heaters, with and without thrust elements 120, "so long as the locations are coordinated with the gauge monitoring locations for activating and deactivating the appropriate heating element or elements" (col. 6, l. 62, to col. 7, l. 8).

We further cannot agree with appellants' arguments that Ludwig "teaches away from being the die body." We find no disclosure in Ludwig which would have taught or suggested to one of ordinary skill that a die such as that of Moriarity cannot be used in Ludwig's apparatus, *see In re Gurley*, 27 F.3d 551, 552-53, 31 USPQ2d 1130, 1131-32 (Fed. Cir. 1994),[4] or that the die of Moriarty was discredited. *See generally, In re Young*, 927 F.2d 588, 591-92, 18 USPQ2d 1089, 1091-92 (Fed. Cir. 1991). Thus, the issue is whether the combined teachings of Ludwig and Moriarity would have suggested to one of ordinary skill in the art to modify the die of Ludwig with the die lip controls taught by Moriarity.

We have carefully compared the shape of the contact surface **8** of coating heads **5**, **5a** and **5b** of the dies heated with heating element **10** described in **Figs. 1**, **2** and **5** and associated disclosure of Ludwig with the corresponding area of die **110**, that is, die lips **112** and **114**, of the die with heating elements **136** and **138** as described in **Figs. 1**, **2** and **5** and associated disclosure of Moriarity, as well as the relationship between the coating head, the perforated cylinder **3** and the counterpressure roller **4** as described by Ludwig in this respect, in light of the arguments of

[4] "A reference may be said to teach away when a person of ordinary skill, upon reading the reference would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. The degree of teaching away will of course depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be

appellants and the examiner. Contrary to appellants' contention that the coating head of Ludwig has a curved surface, we find that the contact surface **8** of coating heads **5** and **5b** of the dies illustrated in Ludwig **Figs. 1** and **5** are not curved to the extent of the contact surface **8** of coating head **5a** of the die illustrated in Ludwig **Figs. 2**. Thus, we agree with the examiner that the flexure of die lip **114** provided by the heating elements **136** and **138** described to provide a uniform heated coating on a backing material by Moriarity would not interfere with the functioning of Ludwig's invention to provide a uniform heating coating on a backing material as intended, as appellants argue.

Therefore, we find in the record substantial evidence supporting the examiner's position that one of ordinary skill in this art would have recognized from the combined teachings of Ludwig and Moriarity that the die of Ludwig can be modified with the die lip controls taught by Moriarity with a reasonable expectation of successfully providing a uniform coating to a backing material, without recourse to appellants' disclosure in the specification. *See, e.g., Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573, 37 USPQ 1626, 1629-30 (Fed. Cir. 1996) ("In this case, the reason to combine [the references] arose from the very nature of the subject matter involved, the size of the card intended to be enclosed."); *In re Gorman*, 933 F.2d 982, 986-87, 18 USPQ2d 1885, 1888-89 (Fed. Cir. 1991) ("The extent to which such suggestion [to select elements of various teachings in order to form the claimed invention] must be explicit in, or may be fairly inferred from, the references, is decided on the facts of each case, in light of the prior art and its relationship to the applicant's invention."); *In re Dow Chem. Co.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988) ("The consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that [the claimed process] should be carried out and would have a reasonable likelihood of success viewed in light of the prior art. [Citations omitted] Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure."); *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981)("The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary

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productive of the result sought by the applicant. [Citations omitted.]." 27 F.3d at 552, 31 USPQ2d at 1131.

reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art."); *In re Siebentritt*, 372 F.2d 566, 152 USPQ 618 (CCPA 1967) (express suggestion to interchange methods which achieve the same or similar results is not necessary to establish obviousness); *see also In re O'Farrell*, 853 F.2d 894, 903-04, 7 USPQ2d 1673, 1680-81 (Fed. Cir. 1988) ("Obviousness does not require absolute predictability of success. . . . There is always at least a possibility of unexpected results, that would then provide an objective basis for showing the invention, although apparently obvious, was in law nonobvious. [Citations omitted.] For obviousness under § 103, all that is required is a reasonable expectation of success. [Citations omitted.]").

We have also considered appellants' arguments at pages 6-7 of the brief based on points 2 through 6 raised at page 5 of the brief, which the examiner finds to correspond to appealed dependent claims 4, 5, 9, 16 and 17 and 18 (answer, pages 15-18). We note that appellants have conceded point 5 with respect to the application of hot-melt adhesive. We agree with the examiner's findings and conclusions in these respects (*id.*). We add with respect to appellants' contention with respect to claim 4, that Moriarity teaches away from "the coating fluid being part of the temperature control," that we find no teaching in this reference or in Ludwig in this respect, *see Gurley*, *supra*; *Young*, *supra*, and in any event, the fact that hot-melt adhesive can be applied through the dies, as appellants concede, is evidence that temperature of the die is affected by the coating material coated in addition to the heat provided by the heating elements taught by Moriarity. We further point out with respect to claims 17 and 18, that one of ordinary skill in this art would have recognized that the amount of a particular material to be applied depends on the parameters desired in the final coating product, including the g/m^2 of coating required to achieve a desired thickness, and would have applied such amounts of material as necessary to achieve such goals. Thus, we determine that one of ordinary skill in this art would have recognized that controlling the flow of the coating material, including adjusting that flow based on downstream measurements as taught by Moriarity (e.g., col. 6, ll. 46-58, quoted above), is a result effective variable regardless of the units used to express the flow of that material to achieve the desired result. *See, e.g., In re Boesch*, 617 F.2d 272, 275-76, 205 USPQ 215, 218-19 (CCPA 1980)

("[W]e agree with the Solicitor that the prior art would have suggested 'the kind of experimentation necessary to achieve the claimed compositions . . .' This accords with the rule that discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); In re Aller, 220 F.2d 454, 105 USPQ 233 (CCPA 1955) "); *In re Aller*, 220 F.2d 454, 456-58, 105 USPQ 233, 235-37 (CCPA 1955) ("[W]here general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.").

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of obviousness found in the combined teachings of Ludwig and Moriarity with appellants' countervailing evidence of and argument for nonobviousness and conclude that the claimed invention encompassed by appealed claims 1 and 3 through 19 would have been obvious as a matter of law under 35 U.S.C. § 103(a).

We reach the same conclusion with respect to the ground of rejection of appealed claims 1, 3 through 7 and 9 through 19 under 35 U.S.C. § 103(a) over the combined teachings of Bayer and Moriarity because, as we pointed out above, because appellants rely on the arguments presented with respect to the ground of rejection based on the combined teachings of Ludwig and Moriarity (brief, page 8).

The examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv) (effective September 13, 2003; 69 Fed. Reg. 49960 (August 12, 2004); 1286 Off. Gaz. Pat. Office 21 (September 7, 2004)).

AFFIRMED

EDWARD C. KIMLIN Administrative Patent Judge	)	
CHARLES F. WARREN Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
TERRY J. OWENS Administrative Patent Judge	)	

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