

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. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte FERDINAND ALTHAUSEN,
REINER RAFFEL,
and
WILFRIED EBELING

Appeal No. 2001-1142
Application No. 09/065,143

ON BRIEF

Before PAK, DELMENDO, and POTEATE, **Administrative Patent Judges**.
PAK, **Administrative Patent Judge**.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 8 and 11 through 13, which are all of the claims pending in the above-identified application.

Appeal No. 2001-1142
Application No. 09/065,143

APPEALED SUBJECT MATTER

According to appellants (Brief, page 3):

None of the claims will be argued separately. Claims 8 and 11-13 therefore stand or fall together.

Accordingly, for purposes of this appeal, we select claim 8 from all of the claims on appeal and determine the propriety of the examiner's rejections based on this claim alone pursuant to 37 CFR § 1.192(c)(7) and (c)(8)(2000). Claim 8 is provided below:

8. A device for producing foam materials from two-component reactive plastics comprising two reactive components using carbon dioxide under pressure, comprising a mixing apparatus for mixing the two reactive components, wherein at least one of the two reactive components contains carbon dioxide under pressure, wherein said mixing apparatus comprises an outlet and at the outlet of this mixing apparatus at least one exit opening extending to less than 1 mm in at least one cross-sectional dimension, wherein said device also comprises a sieve to stabilize the flow immediately downstream of the at least one exit opening extending to less than 1 mm in at least one cross sectional dimension, wherein each said at least one exit opening comprises a free cross-sectional area, wherein the sieve comprises a free cross-sectional area which is 5 to 100 times that of the free cross-sectional area of all of said at least one exit openings.

PRIOR ART

The examiner relies on the following sole prior art reference:

Fiorentini et al. (Fiorentini) 5,665,287 Sep. 9, 1997

Appeal No. 2001-1142
Application No. 09/065,143

THE REJECTION

Claims 8 and 11 through 13 stand rejected under 35 U.S.C. § 103 as unpatentable over the disclosure of Fiorentini.

OPINION

We have carefully reviewed the claims, specification and prior art, including all of the evidence and arguments advanced by both the examiner and appellants in support of their respective positions. This review leads us to conclude that the examiner's Section 103 rejection is well founded. Accordingly, we will sustain that rejection for the findings of fact and conclusions set forth in the Answer. We add the following primarily for emphasis and completeness.

We find that Fiorentini discloses "a system for the continuous manufacture of polymeric foams." See the abstract. We find that the system described by Fiorentini, like the claimed device, comprises a mixing device (12) for mixing two reactive components, such as a polyol and an isocyanate, and a blowing agent, such as carbon dioxide. Compare Fiorentini, column 5, lines 12-20 with claim 8 and the specification, page 10, lines 1-7. We find the Fiorentini reference describes that the mixing device (12) has an outlet which is in fluid communication with an elongated pressure equalizing chamber (21) having a pressure drop

Appeal No. 2001-1142
Application No. 09/065,143

zone in the form of elongated slots or other suitably shaped apertures for flowing the mixture. See Fiorentini, column 5, lines 12-62. The appellants do not dispute the examiner's finding that the chamber (2) having a pressure drop zone in the form of elongated slots or other suitably shaped apertures corresponds to the claimed sieve. See also the specification, page 20, lines 1-10, where "sieve" includes perforated plates.

The examiner recognizes that Fiorentini is silent as to a cross-sectional dimension of at least one exit opening of the outlet of the mixing device and a ratio of cross-sectional areas of the slots or apertures to at least one exit opening. See the Answer, page 3. However, as found by the examiner (*Id.*), Fiorentini recognizes such variables to be no more than result effective variables. Specifically, Fiorentini states (column 4, lines 8-32, column 5, lines 49-62 and column 8, lines 36-47) that:

According to present invention, because the mixture, when reaction begins, is already viscous and supports a steep rise angle, the foam's rising angle is no longer a limitation on the process conditions. The froth being discharged from the frothing cavity is a homogeneous pre-expanding mixture with a sufficiently high viscosity to avoid rise angle problems associated with prior production equipment and flexible slab stock lines. The viscosity is enough to sustain the production of high blocks, that have fully reacted, even at very slow speeds with steep fall plate angles. This condition is accomplished by controlling

the expansion phase of the mixture, after the mix head, and allows for the progressive release of the blowing agent in the reacting mass. Accordingly, the four critical factors can be varied to achieve the desired density rather than having to be linked to a rigid set of parameters as was the case with prior foam processes. The speed and size of a line or plant can be tailored to the needs of the foam manufacturer with speeds from 1 to 5 meters per minute, and lengths as short as 20 meters or less, rather than the more conventional length of about 100 meters. This also permits a smaller volume per hour of exhaust to be dealt with and removed or scrubbed, simpler metering and plant fabrication, foams made with CO₂, a smaller volume of air to be conditioned, and very low densities down to about 14 kg/m³ or less.

. . . . However, the pressure drop zone could be formed from other suitably shaped pressure-drop apertures for flowing the mixture before frothing. As is shown in FIGS. 6 and 7, the discharge or gate bar 60 and 70, respectively could include a series of apertures of circular (such as the spaced apart elongated, tubular holes or openings 74-78), oblong or rectangular shape (such as the spaced apart slots 64-68), or a series of elongated, but shorter, slots so long as the controlled conditions were produced. The slot or more precisely said pressure-drop zone 17 has a restricted cross-sectional area sufficient to cause a pressure reduction in the mixture emerging from the chamber 21 during frothing, and a corresponding back pressure in the mixing device 11 for the purpose mentioned above.

. . . .

The gate bar 60 could have the configuration shown in FIGS. 6 and 7. In FIG. 6 the bar had a rectangular outer shape as well as a rectangular cross-sectional inner chamber 62. A series of elongated slots, as are shown at 64, 66 and 68, for example, could be used to provide the desired outlet from the gate bar 60 and the desired pressure drop. In FIG. 7 the gate bar 70 is provided with a circular cross-sectioned interior chamber 72 from which a series of tubular

Appeal No. 2001-1142
Application No. 09/065,143

outlet apertures, as shown at **74, 76** and **78**, for example, axially extend in the flow direction to provide the desired openings and pressure drop.

Thus, we conclude that mere optimization of result effective variables, such as cross-sectional dimensions and areas of at least one exit of the outlet and the apertures of the gate bar, of the system described in Fiorentini would have been well within the ambit of one of ordinary skill in the art. **See *In re Boesch***, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980). This is especially true since Fiorentini, like the claimed invention, is directed to "production of soft, low density foam, with a very homogeneous cell structure, free from large bubbles, pinholes and visible defects." Compare Fiorentini, column 3, lines 1-4 and 29-35, with the appellants' arguments at page 5 of the Brief. As stated by our reviewing court in ***In re Woodruff***, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990):

The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims These cases have consistently held that in such a situation, the applicant must show that the particular range is *critical*, generally by showing that the claimed range achieves unexpected results relative to the prior art range. [Citations omitted.]

Appeal No. 2001-1142
Application No. 09/065,143

The appellants argue that the claimed device imparts unexpected results relative to the prior art device. See the Reply Brief, page 3, together with the Brief, page 5. However, we observe that the appellants have not proffered any factual evidence to support their arguments. See the Brief and the Reply Brief in their entirety. Mere arguments in the Brief and the Reply Brief or conclusory statements in the specification cannot take the place of objective evidence. *See In re De Blauwe*, 736 F.2d 699, 705, 222 USPQ 191, 196 (Fed. Cir. 1984); *In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972). Moreover, we find that the appellants' alleged improvements are expected from the teachings at column 3, lines 1-4 and 29-35 of Fiorentini as indicated *supra*. *See, e.g., In re Skoner*, 517 F.2d 947, 950, 186 USPQ 80, 82 (CCPA 1975) ("[e]xpected beneficial results are evidence of obviousness of a claimed invention just as unexpected beneficial results are evidence of unobviousness").

Under these circumstances, we agree with the examiner that the claimed subject matter as a whole would have been obvious to one of ordinary skill in the art in view of Fiorentini. Accordingly, we affirm the examiner's decision rejecting claims 8 and 11 through 13 under 35 U.S.C. § 103.

Appeal No. 2001-1142
Application No. 09/065,143

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

CHUNG K. PAK)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
ROMULO H. DELMENDO)	APPEALS AND
Administrative Patent Judge)	INTERFERENCES
)	
)	
LINDA R. POTEATE)	
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CKP:hh

Appeal No. 2001-1142
Application No. 09/065,143

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