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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* FRANK LUDWIG HOLSTEYNS  
and ALEXANDER LIPPERT

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Appeal 2014-003543  
Application 12/889,975  
Technology Center 1700

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Before PETER F. KRATZ, BEVERLY A. FRANKLIN, and  
CHRISTOPHER C. KENNEDY, *Administrative Patent Judges*.

FRANKLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants seek our review under 35 U.S.C. § 134 of the Examiner's decision rejecting claims 1–11. We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

STATEMENT OF THE CASE

Claim 1 is illustrative of Appellants' subject matter on appeal and is set forth below (with text in bold for emphasis):

1. A device for treating a surface of an article with a fluid, comprising:
  - a holder configured to position an article in a predetermined orientation;
  - a source of ultrasonic or megasonic energy positioned so as to vibrate a fluid medium adjacent the article;** and
  - a generator of treatment fluid configured to discharge adjacent said source of ultrasonic or megasonic energy a treatment fluid** after decreasing a pressure of said treatment fluid, such that gas previously dissolved in said liquid comes out of solution in the form of bubbles;
    - wherein said source of ultrasonic or megasonic energy is configured to generate an interference pattern in said treatment fluid comprising regions of pressure amplitude minima and maxima at an interface of said treatment fluid and said article; and
    - wherein said generator of treatment fluid is further configured to inject said treatment fluid parallel to the regions of pressure amplitude minima and maxima or at an angle thereto of up to 60 degrees.**

The Examiner relies on the following prior art references as evidence of unpatentability:

|                  |                    |                                |
|------------------|--------------------|--------------------------------|
| Boyd et al.      | US 2004/0173238 A1 | Sept. 9, 2004<br>("Boyd")      |
| Yi et al.        | US 2007/0169795 A1 | July 26, 2007<br>("Yi")        |
| Montierth et al. | US 2007/0207707 A1 | Sept. 6, 2007<br>("Montierth") |
| Franklin         | US 2008/0017219 A1 | Jan. 24, 2008                  |

### THE REJECTIONS

1. Claims 1–5 and 7–11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Montierth in view of Franklin in view of Yi.
2. Claim 6 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Montierth in view of Franklin in view of Yi, and further in view of Boyd.

### ANALYSIS

Figures 4a and 4b of Appellants' Specification are reproduced below.

Fig. 4a

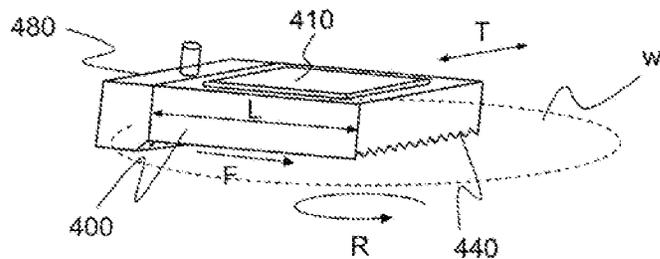


Fig. 4b

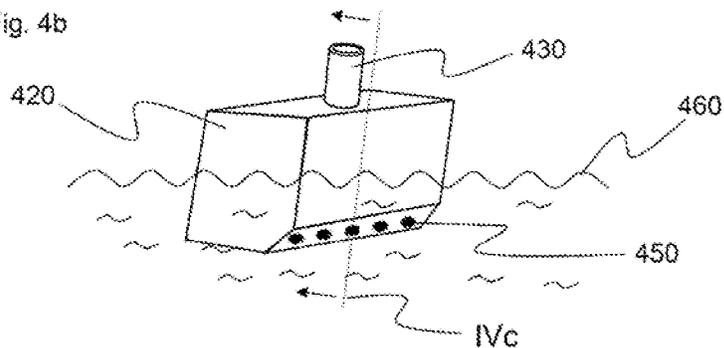


Figure 4a shows an overview of the combination of a bubble injection machine with a resonator, close to a rotating substrate. Figure 4b shows a right front view of the bubble machine of Figure 4a.

Beginning at the bottom of page 12 of the Specification, the Specification discloses that bubble injection device 480 “is positioned next to the grooves” 440 of solid element 400. Spec. 12–13; Figure 4a. The bubble injection device 480 is the claimed “generator of treatment fluid configured to discharge adjacent said source of ultrasonic or megasonic energy a treatment fluid.” The claimed “source of ultrasonic or megasonic energy” is the resonator (solid element 400). Figure 4a shows flow (containing the bubbles) F. Flow F is preferably injected to the regions of maximum and minimum pressure amplitude or alternatively up to an angle of 60 degrees. Spec. 13.

Appellants argue that claim 1 requires that the generator of treatment fluid (the bubble injection device 480) is configured to discharge the treatment fluid adjacent the source of ultrasonic or megasonic energy. Appellants argue that Franklin, on the other hand, generates bubbles at depressor valve 14 that is remote from the source of ultrasonic energy (items 12a-e of Franklin, which is a transmitter that is vibrated by being connected to transducers 11). Franklin, para. [0057]. Appellants therefore submit that the claim language of “a generator of treatment fluid configured to discharge adjacent said source of ultrasonic or megasonic energy a treatment fluid” is not met by the combination of applied references. Appeal Br. 5–6; Reply Br. 2–3.

The Examiner argues that Appellants’ claim interpretation is overly-narrow for the reasons expressed on page 20 of the Answer. The Examiner

states on page 20 of the Answer that the claim language may include situations wherein bubbles are first generated (remote from the resonator) and thereafter discharged downstream. However, the claim phrase “a generator of treatment fluid configured to discharge adjacent said source of ultrasonic or megasonic energy a treatment fluid” requires that it is the generator of treatment fluid that discharges the treatment fluid adjacent the source of ultrasonic or megasonic energy.<sup>1</sup> Appellants argue, *inter alia*, that depressor valve 14 is the generator of treatment fluid in Franklin, and it is located remote from the transmitter 12e (the source of megasonic energy in Franklin). Appeal Br. 5.

On pages 21–22 of the Answer, the Examiner responds that the megasonic resonator of Montierth and the main body/transmitter (12e of Franklin) can be considered to be adjacent to each other in the proposed combination. However, this response does not adequately address the point made by Appellants that main body/transmitter 12e of Franklin is the source of megasonic energy (not the generator of treatment fluid). Reply Br. 3. We agree with Appellants that main body/transmitter 12e of Franklin is not the claimed generator of treatment fluid. Depressor regulator 14 is the generator of treatment fluid. Franklin, para. [0062]. Liquid supply line 21 is connected to transmitter 12e which provides the cleaning fluid (having bubbles already generated by depressor regulator 14) to the transmitter 12e. Franklin, Figure 8. Transmitter 12e generates megasonic energy (as

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<sup>1</sup> Appellants’ claim 1 requires that the generator is not the same device as the source of ultrasonic or megasonic energy (resonator). Franklin’s Figure 8 shows how transmitter 12e (with transducer 140), having holes 16a (see Figure 7b), disperses the fluid with the bubbles, and also transmits megasonic energy through meniscus 15 (shown in Figure 7c). Franklin, para. [0066].

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discussed, *supra*), and the treatment fluid (generated by depressor regulator 14) passes through holes 16a (as discussed, *supra*) of main body/transmitter 12e. As such, it is the transmitter 12e of Franklin that discharges the treatment fluid.

In view of the above, we are persuaded by Appellants' position as stated in the record, and reverse Rejection 1 (the Examiner does not rely upon Yi to cure the aforementioned stated deficiencies of the combination of Montierth in view of Franklin). We also reverse Rejection 2 since the Examiner does not rely upon the other applied references to cure the stated deficiencies of the combination of references applied in Rejection 1.

#### DECISION

Each rejection is reversed.

ORDER  
REVERSED