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Paper 18
Date: August 24, 2020

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NANOCELLECT BIOMEDICAL, INC.,
Petitioner,

v.

CYTONOME/ST, LLC,
Patent Owner.

IPR2020-00545
Patent 6,877,528 B2

Before LYNNE H. BROWNE, JO-ANNE M. KOKOSKI, and JAMES A. WORTH, *Administrative Patent Judges.*

BROWNE, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314, 37 C.F.R. § 42.4

I. INTRODUCTION

A. Background and Summary

On February 10, 2020, NanoCellect Biomedical, Inc. ("Petitioner") filed a Petition requesting *inter partes* review of claims 18–24 of U.S. Patent No. 6,877,528 B2 (Ex. 1001, "the '528 patent"). Paper 2 ("Pet."). On June 1, 2020, Cytonome/ST, LLC ("Patent Owner") filed a Preliminary Response. Paper 8 ("Prelim. Resp."). With authorization, on June 19, 2020, Petitioner

filed a Preliminary Reply (Paper 9, "Prelim. Reply") and on June 26, 2020, Patent Owner filed a Preliminary Sur-Reply (Paper 10, "Prelim. Sur-Reply"). Also with authorization, on July 17, 2020, Petitioner filed Preliminary Supplemental Briefing (Paper 14, "Prelim. Supp. Br.") and on July 22, 2202, Patent Owner to filed a Response to Petitioner's Preliminary Supplemental Briefing (Paper 15, "Prelim. Supp. Resp.").

Having considered the arguments and evidence of record, for the reasons explained below, we deny institution of *inter partes* review.

B. Real Parties in Interest

Petitioner indicates that it is the real-party-in-interest. Pet. 2. Patent Owner indicates that it and Inguran, LLC are the real-parties-in-interest. Paper 4, 2.

C. Related Matters

The parties identify the following matters related to the '528 patent:

Cytonome/ST, LLC v. NanoCellect Biomedical, Inc., No. 1:19-cv-00301-UNA (D. Del.) (the "parallel proceeding);

Inter partes review of US 8,623,295 B2 (IPR2020-00548);

Inter partes review of US 9,011,797 B2 (IPR2020-00550);

Inter partes review of US 9,339,850 B2 (IPR2020-00546);

Inter partes review of US 10,029,263 B2 (IPR2020-00549)

Inter partes review of US 10,029,283 B2 (IPR2020-00547); and

Inter partes review of US 10,065,188 B2 (IPR2020-00551).

Pet. 3, Paper 4, 1–2.

D. The '528 Patent

The '528 patent "relates to microscale fluid handling devices and systems. More particularly, the present invention relates to a method and system for controlling liquid flow in a microchannel by the introduction of a

gas bubble to a microfluidic system." Ex. 1001, 1:16–21. Figure 16, reproduced below, shows the sorting apparatus.

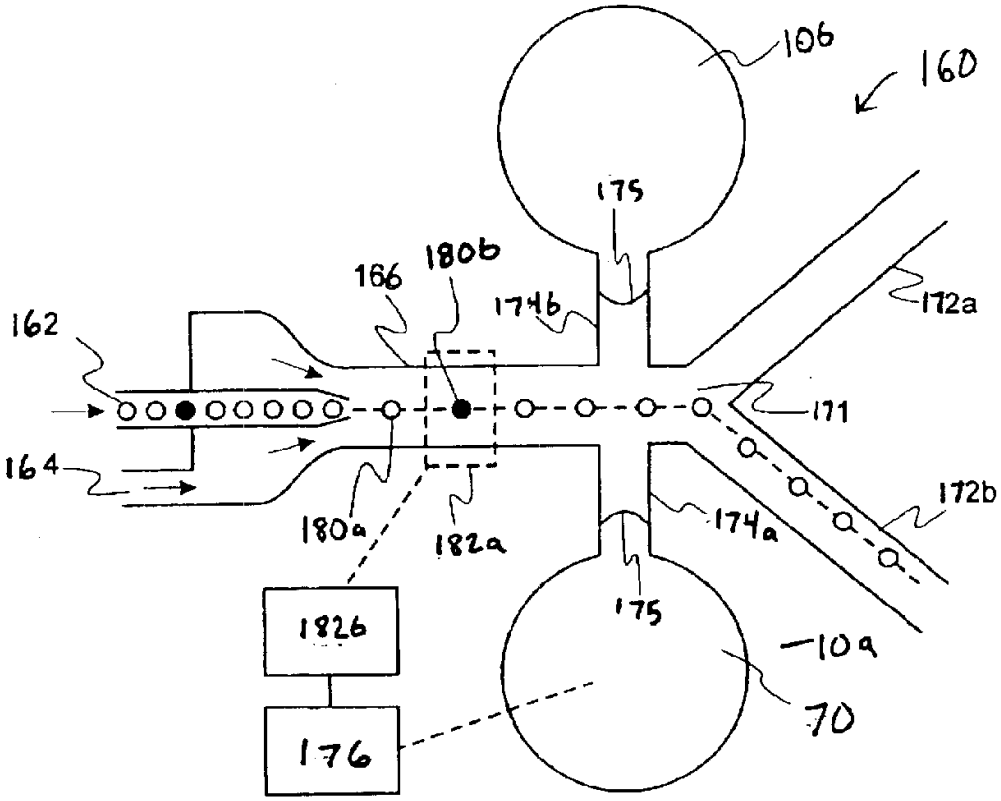

FIG. 16

Figure 1 is a schematic view of "a particle sorting system that implements a bubble valve . . . to produce fluid impulses to sort particles." Ex. 1001, 5:43–45. As shown in Figure 16, "particle sorter 160 comprises a closed channel system of capillary size for sorting particles, such as cells" including "first supply duct 162 for introducing a stream of particles and [] second supply duct 164 for supplying a carrier liquid." *Id.* at 11:51–55. "[F]irst supply duct 162 ends in a nozzle, and a stream of particles is introduced into the flow of carrier liquid." *Id.* at 11:55–57. "[F]irst supply duct 162 and the second supply duct 164 enter a measurement duct 166,

which branches into a first branch 172a and a second branch 172b at a branch point 171." *Id.* at 11:57–60. "[M]easurement region 182a is defined in the measurement duct 166 and is associated with a detector 182b to sense a predetermined characteristic of particles in the measurement region 182a." *Id.* at 11:60–63. "Two opposed bubble valves 10a and 10b are positioned in communication with the measurement duct 166 and are spaced opposite each other." *Id.* at 11:63–66. "The bubble valves 10a, 10b communicate with the measurement duct 166 through a pair of opposed side passages 174a and 174b, respectively." *Id.* at 11:66–12:1. "An external actuator 176 is also provided for actuating the bubble valves 10a, 10b, which momentarily causes a flow disturbance in the duct to deflect the flow therein when activated by the actuator 176." *Id.* at 12:3–6.

This system can distinguish between normal particles 180a and particles of interest 180b. Ex. 1001, 12:7–9. When detector 182b senses a predetermined characteristic in the particles in measurement region 182a, it raises a signal. *Id.* at 12:12–14. When external actuator 176 receives this signal it activates bubble valves 10a, 10b to create a flow disturbance in measurement duct 166. *Id.* at 12:14–16. The flow disturbance deflects the particle having the predetermined characteristic so that it flows down first branch 172a. *Id.* at 12:16–20. Actuator 176 creates the flow disturbance by causing pressure variations in reservoir 70 of first bubble valve 10a. *Id.* at 12:22–25. Reservoir 70b of second bubble valve 10b is a chamber with a resilient wall or contains compressible gas to allow the flow of liquid from measurement duct 166 into second side passage 174b. *Id.* at 12:30–34. "Upon activation of the actuator, the pressure within the reservoir of the first bubble valve 10a is increased, causing a transient discharge of liquid from the first side passage 174a as indicated by the arrow." *Id.* at 12:37–41. "The

sudden pressure increase caused at this point in the duct causes liquid to flow into the second side passage 174b because of the resilient properties of the reservoir of the second bubble valve 10b." *Id.* at 12:41–44.

E. Illustrative Claim

Petitioner challenges claims 18–24 of the '528 patent. Pet. 1. Claims 18 and 22 are independent claims. Claim 18, reproduced below, is illustrative of the claimed subject matter, and is reproduced below.

> 18. A microfluidic device, comprising:
> a channel for conveying a stream of particles in a carrier fluid;
> an actuator for selectively applying a pressure pulse to the stream to deflect a particle in the stream of particles from the stream of particles, and
> a buffer for absorbing the pressure pulse.

F. Prior Art and Asserted Grounds

Petitioner asserts that claims 18–24 would have been unpatentable based on the following grounds:

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
18–22	103(a)	Wada[1]
23, 24	103(a)	Wada, Anderson[2]
18–24	103(a)	Marcus,[3] Anderson

Petitioner also relies on a Declaration of Bernhard H. Weigl, Ph. D. Ex. 1002.

II. ANALYSIS

A. Discretion Under 35 U.S.C. § 314(a)

Patent Owner contends that we should exercise discretion under 35 U.S.C. § 314(a) to deny institution in the instant proceeding. Prelim.

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[1] WO 00/070080, published November 23, 2000 (Ex. 1006, "Wada").
[2] WO 97/002357, published January 23, 1997 (Ex. 1012, "Anderson").
[3] US 5,101,978, issued April 7, 1992 (Ex. 1005, "Marcus").

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