

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DONGHEE AMERICA, INC. AND DONGHEE ALABAMA, LLC,
Petitioner,

v.

PLASTIC OMNIUM ADVANCED INNOVATION AND RESEARCH,
Patent Owner.

Case IPR2017-01654
Patent 9,079,490 B2

Before MITCHELL G. WEATHERLY, CHRISTOPHER M. KAISER, and
ROBERT L. KINDER, *Administrative Patent Judges*.

WEATHERLY, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a), 37 C.F.R. § 42.73

I. INTRODUCTION

A. BACKGROUND

Donghee America, Inc. and Donghee Alabama, LLC (collectively “Petitioner”) filed a petition (Paper 1, “Pet.”) to institute an *inter partes* review of claims 1, 2, 7–9, and 12–14 of U.S. Patent No. 9,079,490 B2 (Ex. 1001, “the ’490 patent”). 35 U.S.C. § 311. Petitioner supported the Petition with a Declaration from David O. Kazmer, Ph.D. (Ex. 1007).

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Plastic Omnium Advanced Innovation and Research (“Patent Owner”) timely filed a Preliminary Response. Paper 8 (“Prelim. Resp.”). On January 19, 2018, based on the record before us at the time, we instituted an *inter partes* review of all challenged claims on all asserted grounds of unpatentability. Paper 9 (“Institution Decision” or “Dec.”). We instituted the review on the following challenges to the claims:

References	Basis	Claim(s)
U.S. Patent Pub. No. 2008/0006625 A1 (Ex. 1003, “Borchert”)	§ 102(e)	1, 2, 8, and 12–14
Borchert	§ 103	7
Borchert and U.S. Patent 6,866,812 B2 (Ex. 1004, “Van Schaftingen”)	§ 103	7
Borchert and U.S. Patent 8,122,604 B2 (Ex. 1005, “Jannot”)	§ 103	2
Borchert and U.S. Patent 6,699,413 B2 (Ex. 1006, “Kachnic”)	§ 103	9

After we instituted this review, Patent Owner filed a Patent Owner Response in opposition to the Petition (Paper 15, “PO Resp.”) that was supported by a Declaration from Tim Osswald, Ph.D. (Ex. 2002). Petitioner filed a Reply in support of the Petition (Paper 28, “Reply”) that was supported by a second Declaration from Dr. Kazmer (Ex. 1011). With our authorization, Patent Owner filed a Sur-reply to Petitioner’s Reply (Paper 30, “Surreply”). Patent Owner did not move to amend any claim of the ’490 patent.

We heard oral argument on November 5, 2018. A transcript of the argument has been entered in the record (Paper 37, “Tr.”).

We have jurisdiction under 35 U.S.C. § 6. The evidentiary standard is a preponderance of the evidence. *See* 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

For the reasons expressed below, we conclude that Petitioner has demonstrated by a preponderance of evidence that claims 1, 2, 7–9, and 12–14 are unpatentable.

B. RELATED PROCEEDINGS

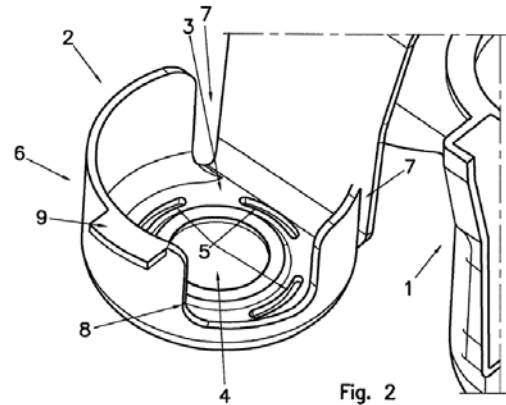
The parties have identified as a related proceeding the co-pending district court proceeding of *Plastic Omnium Advanced Innovation & Research v. Donghee America, Inc. et al.*, Civil Action No. 16-cv-00187-LPS-CJB (D. Del.). Pet. 2; Paper 3, 1.

C. THE '490 PATENT

The '490 patent is directed to “a method for fastening an accessory to a wall of a plastic fuel tank.” Ex. 1001, 1:16–17. More specifically, the '490 patent is directed to a process for snap-riveting accessories to the wall of a plastic fuel tank during molding of the tank. *Id.* at 1:60–2:5. Snap-riveting involves forcing molten plastic from the tank wall through an orifice in the accessory and allowing the protruding plastic to solidify to form the head of a rivet. *Id.* at 3:40–47. The '490 patent describes snap-riveting as a “common technique in the field of metallurgy,” *id.* at 3:43, that has been used in the prior art to fasten accessories to plastic fuel tanks, *id.* at 1:35–41. The Specification further describes “an improved geometry of the snap-riveting zone that makes it possible to ensure [self-centering] of the accessory with respect to the tool which will carry out the snap-riveting and that makes it possible to obtain a better distribution of the stress during this

process.” *Id.* at 1:60–65. In particular, the snap-riveting orifice is surrounded by a concave relief. *Id.* at 3:61–62.

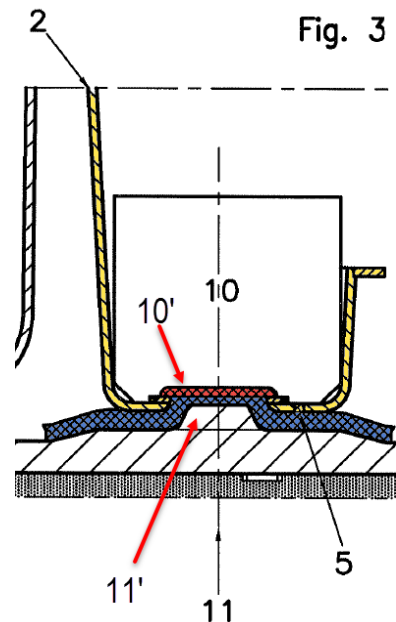
Figure 2 of the '490 patent, reproduced right, illustrates accessory 1 having tab 2 with central orifice 4 through which molten plastic flows to form a snap rivet connecting accessory 1 to the wall of the tank. The Specification states:



In FIG. 2, the geometry of the fastening tabs (2) of the accessory (1) appears more clearly: the curved end (3) of these tabs is provided with a central orifice (4) and with several slots (5) positioned over a circumference surrounding this orifice (4). This curved end (3) is extended by a cylindrical wall (6) in the shape of a cup provided with two recesses (7) that confer a certain mobility to the end of the tab—necessary for accompanying the shrinkage of the material during cooling of the tank—and a wider window (8) that allows visual inspection of the snap-rivet once the accessory is fastened to the wall of a tank.

Id. at 7:1–11.

We reproduce at right the pertinent portion of Figure 3 of the '490 patent with our annotations and coloring, which depicts a cross section of tab 2 (colorized yellow) with the head of a snap rivet above orifice 5 and within concave portion 10' of tool 10 (colorized red), which is formed of plastic used to form the wall of the tank (colorized blue).



Id. at 7:14–25. The reproduced portion of Figure 3 also illustrates the lower portion of snap rivet being formed between mould 11 with excess 11', tool 10 and tab 2. *Id.*

Claims 1 and 12, which are the only independent claims among the challenged claims, recite:

1. A method for fastening an accessory to a wall of a plastic fuel tank, comprising:
 - [a] fastening by snap-riveting using a tool, at the same time as said tank is manufactured by moulding with a mould, the accessory including at least one orifice through which the snap-riveting is carried out by material of the tank protruding from the orifice and being deformed to mould the rivet,
 - [b] wherein the snap-riveting orifice is at least partially surrounded by a concave relief that protrudes towards an inside of the tank into which a convex relief of the tool presses in order to force the material through the orifice, the convex relief of the tool comprising a counterform to mould an upper part of the rivet.

Id. at 7:26–40 (with Petitioner’s enumerations for clarity added in brackets);
see Pet. 16–20 (for Petitioner’s enumerations).

12. A method for fastening an accessory to a wall of a plastic fuel tank, comprising:
 - [a] fastening by snap-riveting using a tool, at the same time as said tank is manufactured by moulding with a mould, the accessory including at least one orifice through which the snap-riveting is carried out by material of the tank protruding from the orifice and being deformed to mould the rivet,
 - [b] wherein the snap-riveting orifice extends through a base portion of a concave relief formed in the accessory,
 - [c] wherein the concave relief is formed by the base portion and a wall portion that protrudes away from the base portion towards an inside of the tank,
 - [d] wherein an area of the base portion surrounds the orifice and faces towards the inside of the tank,
 - [e] wherein the wall portion at least partially surrounds the area of the base portion that surrounds the orifice such that the wall

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