

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte KENNETH J. MCNULTY, NEIL YEOMAN, AND  
MATTHEW BUCHHOLZ

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Appeal No. 2000-1111  
Application 08/881,969

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ON BRIEF

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Before PAK, TIMM and MOORE Administrative Patent Judges.

MOORE, Administrative Patent Judge.

**DECISION ON APPEAL**

This is an appeal under 35 U.S.C. § 134 from a final rejection of claims 1 and 4-15, all the claims pending in this application. Claims 2 and 3 have been canceled.

**REPRESENTATIVE CLAIM**

Claim 1, which is illustrative of the subject matter on appeal, reads as follows:

1. A hollow, saddle-shaped packing structure comprising:

an outer saddle-shaped shell element including a porous outer semi-cylindrical side wall and

a pair of generally radially opposed, laterally extending outer flanges, the outer side wall presenting a pair of axially opposed, circumferentially extending marginal edges;

an inner saddle-shaped shell element including a porous inner semi-cylindrical side wall and

a pair of radially opposed, laterally extending inner flanges, the inner side wall presenting a pair of axially opposed, circumferentially extending marginal edges;

a means for securing the outer and inner flanges together;

a means for closing off the interior space between the marginal edges of the outer and inner shell elements;

the outer and inner side walls being spaced from one another to define an interior space; and

a particulate catalyst component retained in the interior space between the side walls.

15. A saddle packing structure comprising:

an outer saddle-shaped shell element including a porous, semi-cylindrical screen defining an outer side wall;

an inner saddle-shaped shell element connected to the outer shell element and including a porous, semi-cylindrical screen defining an inner side wall that is spaced from the outer side wall to define an interior space;

a pair of axially opposed end walls for closing off the interior space between the side walls of the outer and inner shell elements; and

a particulate catalyst component retained in the interior space between the side walls of the outer and inner shell elements.

### THE REFERENCES

In rejecting the appealed claims under 35 U.S.C §103, the Examiner relies on the following references:

Smith, Jr. (Smith)	4,443,559	Apr. 17, 1984
Adams (Adams) (European Patent)	0,458,472	May 15, 1995

### THE REJECTIONS

Claims 1 and 4-15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Adams taken alone or with Smith.

### SUMMARY OF DECISION

On consideration of the record before us on appeal, we reverse.

### DISCUSSION

#### The Claimed Invention

The Appellants' invention relates generally to a reactive distillation unit in which a chemical reaction and distillation are carried out simultaneously, and a packing structure which houses a randomly situated particulate catalyst component. More specifically as claimed, the invention relates to a saddle-shaped packing structure which is formed by outer and inner saddle-shaped shell elements and a particulate catalyst component. The outer shell element includes a porous, semicylindrical side wall with axially spaced marginal edges and a pair of radially opposed, laterally extending flanges. The inner shell element also includes a porous, semicylindrical side wall presenting axially spaced marginal edges and a pair of radially opposed, laterally extending flanges. The inner side wall of the shell element is of a smaller radius than the outer side wall. An interior

space is defined between the side walls for receiving the particulate catalyst component. (Appeal Brief, page 1, line 14 - page 2, line 6).

The §103 Rejection over Adams alone or with Smith

Claims 1 and 4-15 are rejected under 35 U.S.C. §103(a) as being unpatentable over Adams taken only or with Smith. More specifically, the Examiner has found that Adams teaches using packing elements with the catalyst carried inside of the element. The Examiner then concludes it would have been obvious to one of ordinary skill in the art to make the packing element of Adams in a known structure such as a saddle. (Examiner's Answer, page 4, lines 6-8). The Examiner further has found that Smith teaches using different packing structures with a catalyst carried internally, which suggests to one of ordinary skill in the art that other, known packing structures can be used in the device of Adams. Finally, the Examiner has found that it would have been obvious to make the saddle in two parts (an inner and an outer part) that fit together for ease of manufacture. (Examiner's Answer, page 4, lines 8-12).

The Appellants, on the other hand, state that none of the applied references of record, when considered either singularly or in combination with one another, show or suggest a saddle-shaped packing structure as recited in the claims. More specifically, the Appellants argue that nothing in the Adams reference teaches a porous semicylindrical side wall wherein the side walls are spaced from each other to define an interior space within which a catalyst component is retained (Appeal Brief, page 5, line 26 - page 6, line 12).

The burden is upon the Examiner to set forth a prima facie case of obviousness. See In re Alton, 76 F.3d 1168, 1175, 37 USPQ2d 1578, 1583 (Fed. Cir. 1996). Findings

of fact and conclusions of law must be made in accordance with the Administrative Procedures Act, 5 U.S.C. §706 (A), (E) (1994). See Zurko v. Dickinson, 527 U.S. 150, 158, 119 S. Ct. 1816, 1821, 50 USPQ2d 1930, 1934 (1999). Under the Act, the agency making the findings and conclusions must set forth its findings and explain its application of the law to the facts. See In re Lee, 277 F.3d 1338, 1342,61 USPQ2d 1430, 1432-33 (Fed. Cir. 2002). Findings of fact relied upon in making the obviousness rejection must be supported by substantial evidence within the record. In re Gartside, 203 F.3d 1305, 1315, 53 USPQ2d 1769, 1775 (Fed. Cir. 2000).

We find that Adams relates to a catalytic reaction and distillation container for use as packing material in a distillation column reactor (Adams, column 2, lines 27-51). We further find, contrary to the Examiner's statement otherwise<sup>1</sup>, that Adams specifically suggests a saddle-shaped packing (Adams, column 4, lines 47-50).

Although not noted by the Examiner, we also find that Adams further discloses:

- openings in the walls which may be covered by a porous material (Column 3, lines 30-45);
- a catalyst component is present within the interior of the structure (Column 2, lines 31-32); and
- an inner wall and an outer wall of a hollow cylinder (Column 3, lines 18-29).

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<sup>1</sup> Examiner's Answer, page 4, lines 6-7.

However, we do not see in the Adams disclosure a pair of radially opposed, laterally extending flanges 26 or 38 as illustrated in Figure 1 and as claimed in claim 1. Nor has the Examiner provided any reasoning why such flanges would have been obvious to one of ordinary skill in the art. Additionally, there is no discussion in the rejection regarding the means for securing the outer and inner flanges together. In sum, the Examiner has failed to put forth sufficient evidence to support a prima facie case of obviousness for claim 1 and we reverse this rejection for claim 1 and the claims which depend from claim 1, specifically claims 4 - 14.

Turning now to claim 15, we note that it contains limitations of:

- an outer saddle-shaped shell element including a porous semi-cylindrical screen defining an outer side wall; and
- an inner saddle-shaped shell element connected to the outer shell element and including a porous, semi-cylindrical screen.

The Examiner has failed to identify any teaching or suggestion in the prior art to provide such limitations. The conclusory statements found in the Examiner's Answer regarding making the saddle from two parts (Page 4, lines 11-12 and 16-18) for "ease of manufacture," without more, are insufficient to support the conclusion of obviousness. We therefore reverse this rejection as applied to claim 15.

Claims 7, 8, 9, and 12 are argued separately in the Appellants' Brief at page 7, line 19 to page 8, line 18. They contain additional limitations beyond those in the independent claims. As we have reversed the rejection of independent claim 1 above, further discussion of these claims is unnecessary.

Summary of Decision

The Rejection of claims 1 and 4-15 under 35 U.S.C. 103(a) is reversed.

**REVERSED**

CHUNG K. PAK	)	
Administrative Patent Judge	)	
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	)	BOARD OF PATENT
CATHERINE TIMM	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	
	)	INTERFERENCES
JAMES T. MOORE	)	
Administrative Patent Judge	)	

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