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SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application number:
EP 14 90 85 36

Classification of the application (IPC):
C01B 3/02*, *C11B 3/04

Technical fields searched (IPC):
C11B

DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
A	US 2011003370 A1 (GORDON ROMAN [US] ET AL) 06 January 2011 (2011-01-06) * paragraph [0004]; claim 1 * * the whole document *	1-10
A	US 2013062249 A1 (KOZYUK OLEG [US] ET AL) 14 March 2013 (2013-03-14) * claim 1; figures 1,2 * * the whole document *	1-10
X	WO 0240142 A2 (KOZYUK OLEG V [US]) 23 May 2002 (2002-05-23) * page 3, lines 17-21; figure 2 * * the whole document *	1-10
X	US 2006050608 A1 (KOZYUK OLEG V [US]) 09 March 2006 (2006-03-09) * claim 1; figure 1 * * the whole document *	1-10

The supplementary search report has been based on the last set of claims valid and available at the start of the search.

Place of search	Date of completion of the search	Examiner
The Hague	21 March 2018	Straub, Thomas

CATEGORY OF CITED DOCUMENTS

X: particularly relefant if taken alone
Y : particularly relefant if combined with another document of the same category
A: technological background
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P: intermediate document
T: theory or principle underlying the invention
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LACK OF UNITIY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-10
A reactor for degumming oil, the reactor comprising: a housing having a flow path, the flow path having an a surface and the flow path comprising an upstream portion for receiving oil and a downstream portion for receiving processed oil; an annular obstruction attached to the surface of the flow path for reducing the cross- sectional area of the flow path, the obstruction having an opening; a frusto-conical body or a portion thereof positioned in the opening of the annular obstruction, the frusto-conical body having a surface and being positioned along the centerline of the flow path of the housing; the annular obstruction having two or more circumferential spacers in series positioned around the surface of the frusto-conical body; and the two or more circumferential spacers in series positioned around the surface of the frusto-conical body form ring gaps around the surface of the frusto-conical body for guiding oil through the flow path, wherein the cross-sectional area of each ring gap (Ax) is less than that of the next downstream ring gap (Ax+1) according to the following equation: 1.2<Ax+l/Ax < 1.4, where x=l, 2, 3.

2. claims: 11-15
A reactor for degumming vegetable oil in the absence of cavitation, the reactor comprising: a tubular housing having a flow path, the flow path having comprising an upstream portion for receiving oil and a downstream portion for receiving processed oil; the tubular housing having an annular obstruction for reducing the cross-sectional area of the flow path, the annular obstruction comprising a series of two or more circumferential spacers in series, wherein the two or more circumferential spacers each form a circular opening such that the diameter of the opening of each circumferential spacer with each consecutive downstream circumferential spacer; a body or a portion thereof positioned in the circular openings of the two or more circumferential spacers in series, the body having a tapered surface that forms ring gaps between the two or more circumferential spacers and the tapered surface, wherein the ring gaps provide a flow path for the vegetable oil, wherein the cross-sectional area of each ring gap (Ax) is less than that of the next downstream ring gap (Ax+1) according to the following equation: 1.2<Ax +l/Ax < 1.4, where x=l, 2, 3; and the two or more circumferential spacers having a surface facing towards the upstream portion of the flow path, wherein the surface facing towards the upstream portion forms an angle between 90° and 100° with the tapered surface of the body positioned in the circular openings of the two or more circumferential spacers in series and the two or more circumferential spacers having an angled surface facing towards the downstream portion of the flow path, wherein the angled surface facing towards the downstream portion forms an angle between 50° and 80° with the centerline of the flow path through the upstream portion of the tubular housing.

None of the further search fees have been paid within the fixed time limit. The present (supplementary) European search report has been drawn up for those parts of the European patent application which relate to the first mentioned in the claims, namely claims: 1-10

The supplementary search report has been based on the last set of claims valid and available at the start of the search.

Place of search	Date of completion of the search	Examiner
The Hague	21 March 2018	Straub, Thomas

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ANNEX TO SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application number:
EP 14 90 85 36

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on 21-03-2018
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