Apparatus for synthesizing and separating synthesis products e.g. gaseous and liquid phases on bed, maintains heavier liquid phase at lower portion of first meatus due to gravity and lighter liquid phase at upper portion of meatus

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Inventor(s): BRUCATO A, BUSCIGLIO A, DI LELLA E, GRISAFI F, MICALE G, ROCCAFORTE F, SCARGIALI F

Patent Assignee Name(s) and Code(s): CMS SRL (CMSC-Non-standard)
UNIV PALERMO (UYPA-Non-standard)
ECOIL SRL (ECOI-Non-standard)

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Abstract: NOVELTY - The apparatus has header that is set to make the heavier and lighter liquid phases flow along outer side surface of a third tube (8) as far as first closure element (13). The third tube is provided with second side openings for directly connecting the first and second meatus. The heavier liquid phase is maintained at lower portion of the first meatus due to gravity and lighter liquid phase is maintained at upper portion of the first meatus until the liquid phases fall into a fourth tube (9). The heavier liquid phase is collectible through a collection hole (12).

USE - Apparatus e.g. reactor/separator for synthesizing and separating synthesis products e.g. gaseous phase and heavier and lighter liquid phases on catalytic bed, used in production of biodiesel.

ADVANTAGE - Since heavier liquid phase is maintained at lower portion of the first meatus due to gravity and lighter liquid phase is maintained at upper portion of the first meatus, sedimentation separation of the liquid phases is improved. The structure of the apparatus is simplified and the apparatus is constructed easily. The efficacy and use of catalyst are maximized.

DETAILED DESCRIPTION - The apparatus has synthesis module (M1) that is set with a first tube (1) which is provided with an opening at one end and closed at second end by a mesh (7). The first tube is adapted to contain a catalytic bed (6). A separation module (M2) is set to separate heavier and lighter liquid phases and gaseous phase originating from the synthesis module. A second tube (1') is arranged adjacent to second end of the first tube. A first closure element is provided with a through hole for sole passage of the second liquid and of the gaseous phase. A third tube is affixed to first end of second tube. A first meatus is set between second tube and the third tube. The fourth tube is set inside the third tube so as to define a second meatus between the third tube and the fourth tube. A separation zone is set between the heavier and lighter liquid phases. A collection hole is set in the second tube to collect the heavier liquid phase. The third tube is set with first side openings at first end, and is set with a header for collecting the liquid phases originating from the synthesis module. The first meatus is directly inserted into the third tube and subsequently into the fourth tube. A control system is set between the liquid phases, to check and maintain interface level below the upper end of the first side openings. The control system has interface level indicator that is connected to the second tube by second side holes envisaged in side surface of the second tube. One of the second side holes is arranged in proximity of the first closure element and other is positioned above the upper end of the first side openings. The protrusions are arranged along cylindrical side surface of the third tube, and are separated by spaces for passage of the liquid phases from the header to the first meatus. A redistribution module (M3) is set to redistribute the lighter liquid phase and gaseous phase originating from the fourth tube. A fifth tube (1") is arranged adjacent to second end of the second tube. The closure element is set with a central perforated area. A sixth tube (14) is set to descent and release of the gaseous phase. The central perforated area is provided with several holes for homogeneous distribution of lighter liquid phase downstream of the redistribution module. The sixth tube is affixed to a second closure element (15). The mesh is provided with a passage area. The synthesis module, separation module and redistribution module are vertically-stacked. An INDEPENDENT CLAIM is included for a method for synthesizing and separating synthesis products e.g. gaseous phase and heavier and lighter liquid phases on catalytic bed, involves synthesizing on a catalytic bed and producing the synthesis products. The liquid phases and gaseous phase are separated in the separation module.

DESCRIPTION OF DRAWING(S) - The drawing shows a sectional view of the apparatus for synthesizing and separating synthesis products on catalytic bed.

First tube (1)

Second tube (1')

Fifth tube (1")

Catalytic bed (6)

Mesh (7)

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Suggest a correction

If you would like to improve the quality of the data in this record, please suggest a correction.

Third tube (8)

Fourth tube (9)

Collection hole (12)

First closure element (13)

Sixth tube (14)

Second closure element (15)

Synthesis module (M1)

Separation module (M2)

Redistribution module (M3)

Show Documentation Abstract

Drawing:

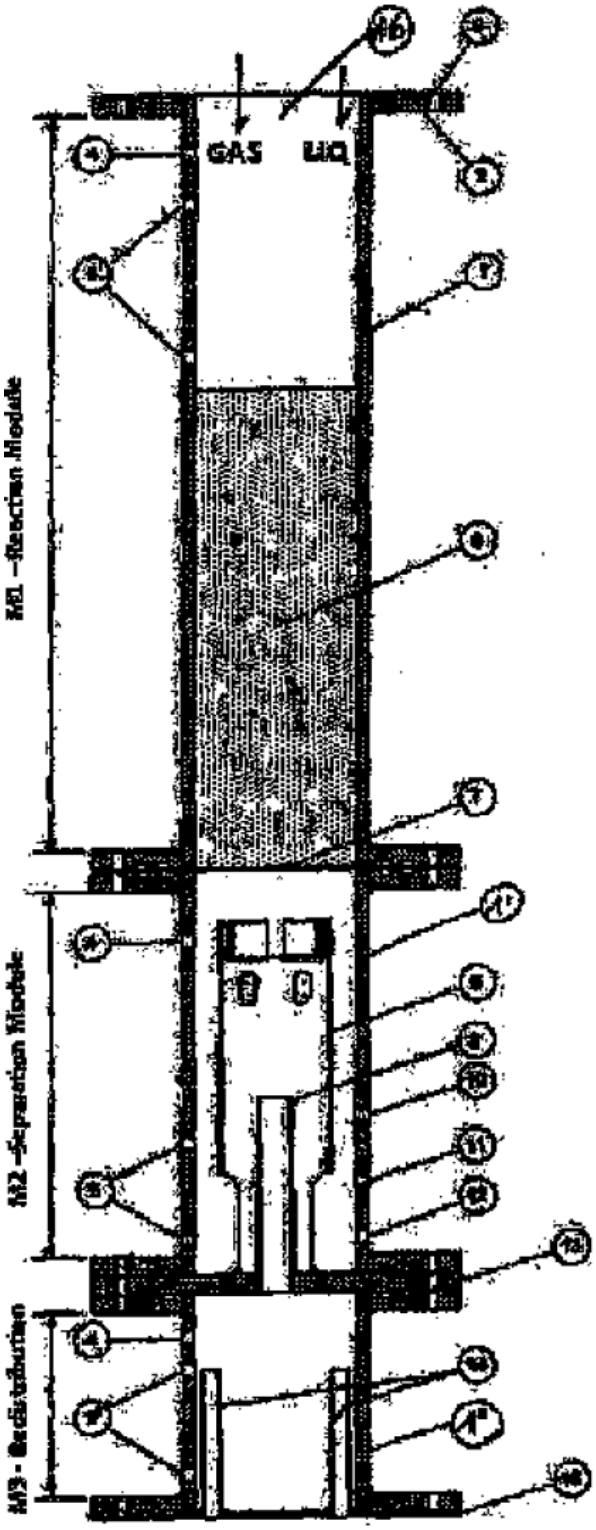

Fig. 3

International Patent Classification: B01D-017/02; B01J-008/00; B01J-008/04; C11C-003/00

Derwent Class Code(s): H06 (Gaseous and liquid fuels including pollution control); J04 (Chemical/physical processes and apparatus including catalysis); D23 (Oils, fats and waxes)

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