

1) Family number: 57659271 (US2016312319A)

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Title: METHOD OF AND APPARATUS FOR PRODUCING SACCHARIFIED SOLUTION BY USING BIOMASS AS RAW MATERIAL, AND CONTINUOUS REACTOR

Abstract: A method of producing a saccharified solution, in which saccharified slurry is obtained by hydrothermally treating cellulosic biomass slurry in a supercritical state or a subcritical state by a continuous reactor. The method reduces the risk of a pressure reducing valve becoming clogged when the high-temperature and high-pressure slurry is flash-evaporated after being hydrothermally treated. Also provides an apparatus for producing a saccharified solution and a continuous reactor. At the time of hydrothermally treating the cellulosic biomass slurry by the continuous reactor continuously, the slurry is intensely stirred in a front part of the continuous reactor, and stirred in a rear part of the continuous reactor by a stirring device with low propelling force, such that the plug flow in the axial direction is kept while the slurry is being uniformly mixed with respect to the cross section perpendicular to the mixing axis.

Classifications:

International (IPC 8-9): B01F13/10 B01F3/06 B01F7/00 B01F7/04

B01F7/08 B01J19/18 B01J19/20 B01J3/00 B09B3/00 C02F11/08

C12M1/00 C12M1/33 C12P19/00 C12P7/10 C12P7/56

C13K1/02 (Advanced/Invention);

B09B3/00 C12P19/00 C13K1/02 (Core/Invention)

CPC: Y02P20/544 Y02E50/30 B09B3/00 B09B3/0091 C13K1/02

B01F7/0065 B01F7/04 B01F7/08 B01F13/1027 C12M45/02 C12M45/04

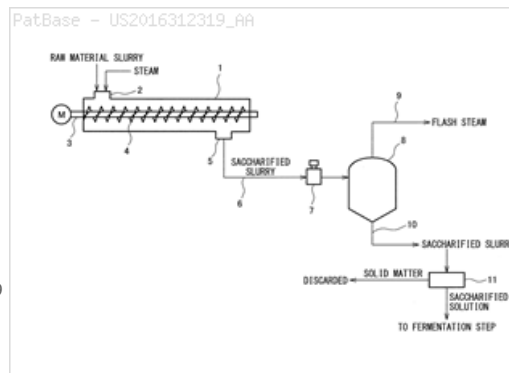
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US: 1/1 127/1

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JP F-Index: B09B3/00/304/Z C02F11/08/ZAB C13K1/02 B01J3/00/A B09B3/00/Z C12P19/00/ZAB

JP Facet: ZAB



Family:

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Assignee(s): (std): KAWASAKI HEAVY IND LTD

Assignee(s): KAWASAKI JUKOGYO KK ; KAWASAKI JUKOGYO KOBE SHI KK

Inventor(s): (std): KUSUDA HIROMASA ; TAJIRI HIRONORI ; TSUZAWA MASAKI ; TSUJITA SHOJI ; IZUMI NORIAKI ; MASAKI TSUZAWA ; NORIAKI IZUMI ; SHOJI TSUJITA ; HIROMASA KUSUDA ; HIRONORI TAJIRI

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Agent(s): CULLENS PTY LTD; SPRUSON AND FERGUSON; LEINWEBER AND ZIMMERMANN; JANUAR FERRY; PATENT CORPORATE BODY ARCO PATENT OFFICE; OLIFF PLC

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT KE KG KM KN KP KR KZ LA LC LI LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

2) Family number: 57700469 (US2016017444A)

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Title: PROCESSING BIOMASS

Abstract: Biomass feedstocks (e.g., plant biomass, animal biomass, and municipal waste biomass) are processed to produce useful products, such as fuels. For example, systems are described that can be useful in enhancing sugar yields from biomass.

Classifications:

International (IPC 8-9): A23L3/26 A61K8/85 A61K8/97 A61K8/99 A61Q13/00 A61Q19/00 B01J B01J19/24 B01J3/00 B09B3/00 B09B5/00 B1J3/00 C07C209/46 C07C229/24 C07C231/02 C07C253/22 C07C29/147 C07C29/149 C07C29/156 C07C45/61 C07C67/08 C07C67/28 C07D207/36 C07D307/02 C07K1/00 C07K1/10 C08B1/00 C08B15/00 C08G63/06 C08G63/08 C08G63/685 C08G63/78 C08G63/81 C08G63/82 C08G63/90 C08G69/04 C08G69/10 C08H8/00 C08J3/24 C08J3/28 C08K3/00 C08K3/04 C08K3/34 C08K3/36 C08K3/38 C08K5/00 C08K5/06 C08K5/11 C08L1/02 C08L23/00 C08L3/00 C08L67/00 C08L67/04 C08L7/00 C08L71/00 C08L75/04 C08L77/00 C08L77/04 C08L77/12 C08L83/04 C08L97/02 C10L9/08 C10M163/00 C10M169/00 C11B C11B1/00 C12M1/00 C12M1/26 C12M1/40 C12N1/22 C12P C12P1/04 C12P1/06 C12P13/00 C12P13/02 C12P13/04 C12P13/14 C12P13/20 C12P19/00 C12P19/02 C12P19/14 C12P7/02 C12P7/06 C12P7/10 C12P7/14 C12P7/20 C12P7/40 C12P7/42 C12P7/44 C12P7/46 C12P7/48 C12P7/56 C12P7/62 C13K1/02 C13K13/00 D21C1/00 D21C1/02 (Advanced/Invention); C07C211/09 C07C233/05 C07C255/04 C07C31/20 C07C69/40 C12R1/225 (Advanced/Non-invention); B01J3/00 C11B1/00 C12P1/04 C12P13/02 C12P7/02 C12P7/44 (Core/Invention)

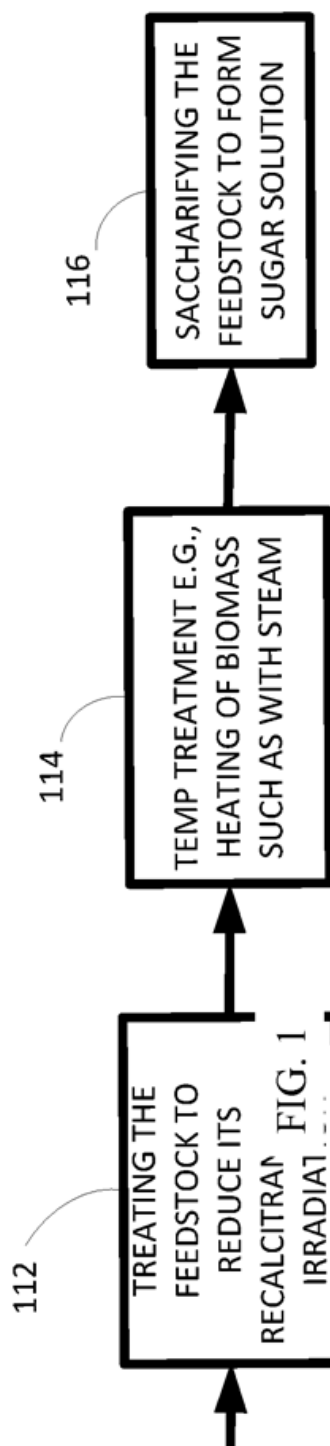
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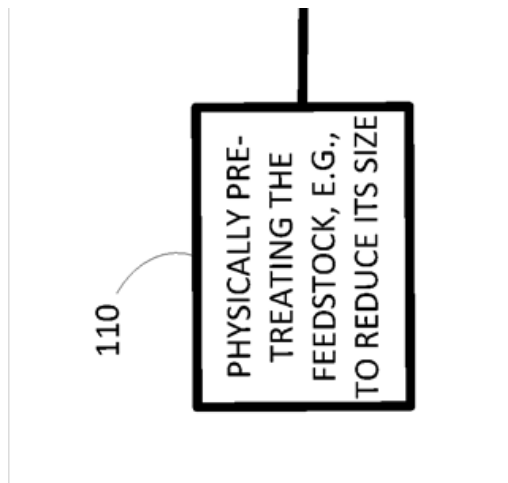
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JP F-Term: 4J002 4J002/AB01 4J002/AB04 4J002/AC01 4J002/AC03 4J002/AH00 4J002/BB00 4J002/BC02 4J002/BE06 4J002/BG04 4J002/BG05 4J002/CF18 4J002/CF19 4J002/CG00 4J002/CH01 4J002/CK02 4J002/CP03 4J002/DA01 4J002/DJ00 4J002/DJ01 4J002/DJ03 4J002/DJ04 4J002/DJ05 4J002/DK00 4J002/DL00 4J002/EH02 4J002/EL13 4J002/FD01 4J002/FD02 4J002/FD03 4J002/FD20 4J002/GT00 4J029 4J029/AA02 4J029/AB05 4J029/AC01 4J029/AC02 4J029/AE01 4J029/AE06 4J029/AE18 4J029/EA02 4J029/EA03 4J029/EA05 4J029/EH03 4J029/JA01 4J029/JA06 4J029/JA09 4J029/JA19 4J029/JA25 4J029/JB12 4J029/JB13 4J029/JB16 4J029/JB17 4J029/JB18 4J029/JB22 4J029/JB24 4J029/JC37 4J029/JF13 4J029/JF18 4J029/JF22 4J029/JF32 4J029/JF37 4J029/JF47 4J029/JF54 4J029/JF56 4J029/KD02 4J029/KD07 4J029/LA20 4B064 4B064/AD30 4B064/AD33 4B064/AD37 4B064/AD38 4B064/AD39 4B064/AD61 4B064/AF02 4B064/AF03 4B064/AF04 4B064/CA02 4B064/CB07 4B064/CC03 4B064/CD09 4B064/CD24 4B064/DA16 4J002/AC09 4J002/BF02 4J002/BG02 4J002/CB00 4J002/CF03 4J002/DE18 4J002/FA04 4J002/GC00 4J029/AD01 4J029/JC36 4J029/JF07 4J029/JF33 4J029/JF36 4J029/JF57 4J029/KH01 4B064/AD01 4B064/AD09 4B064/AD16 4B064/AD18 4B064/AF01 4B064/CA05 4B064/CA06 4B064/CA21 4B064/CB01 4B064/CD02 4B064/CD22 4B068 4D004 4D004/AA01 4D004/AA02 4D004/AA04 4D004/AA12 4D004/AA46 4D004/AC05 4D004/BA03 4D004/BA06 4D004/BA07 4D004/BA10 4D004/CA04 4D004/CA08 4D004/CA09 4D004/CA13 4D004/CA15 4D004/CA18 4D004/CA20 4D004/CA22 4D004/CA24 4D004/CA32 4D004/CA34 4D004/CA36 4D004/CA40 4D004/CA42 4D004/CA43 4D004/CA50 4D004/CB13 4D004/CB45 4D004/CB46 4D004/CC01 4D004/CC07 4D004/CC12 4D004/DA02 4D004/DA03 4D004/DA06 4D004/DA20 4B064/AE02 4B064/AE17 4B064/AE19 4B064/DA20

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Assignee(s): (std): XYLECO INC ; XYLECO

Assignee(s): THOMAS CRAIG MASTERMAN ; ROBERT PARADIS ; ANDREW PAPOULIS ; BERGERON CHRISTOPHER G ; CHRISTOPHER G BERGERON ; JAEWOONG MOON ; KHAN JIHAN ; PARADIS ROBERT ; MASTERMAN THOMAS CRAIG ; MEDOFF MARSHALL ; MOON JAEWOONG ; PAPOULIS ANDREW ; MARSHALL MEDOFF ; JIHAN KHAN

Inventor(s): (std): ANDREW PAPOULIS ; THOMAS CRAIG MASTERMAN ; JAEWOONG MOON ; MARSHALL MEDOFF ; JIHAN KHAN ; ROBERT PARADIS ; CRAIG MASTERMAN THOMAS ; CHRISTOPHER G GERON ; MASTERMAN THOMAS ; COOPER CHRISTOPHER G F ; BERGERON CHRISTOPHER G ; MOON JAEWOONG ; PAPOULIS ANDREW ; KHAN JIHAN ; PARADIS ROBERT ; MASTERMAN THOMAS CRAIG ; MEDOFF MARSHALL ; J MU

Inventor(s): CHRISTOPHER G BERGERON ; COOPER CHRISTOPHER GF

Agent(s): WRAYS; WRAYS PTY LTD; MARKS AND CLERK; OCONNELL MAURA; SCANNELL MICHAEL; AHMAD FATCHY; DONALDSON AND BURKINSHAW LLP; WOLF GREENFIELD AND SACKS PC; MORRELL DENNIS G; DE REGE THESAURO FRANCESCO; LEBER CELIA H

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

3) Family number: 43952853 (US2009286295A)

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Title: PROCESSING BIOMASS

Abstract: Biomass (e.g., plant biomass, animal biomass, and municipal waste biomass) is processed to produce useful products, such as fuels. For example, systems can use feedstock materials, such as cellulosic and/or lignocellulosic materials, to produce ethanol and/or butanol, e.g., by fermentation.

Classifications:

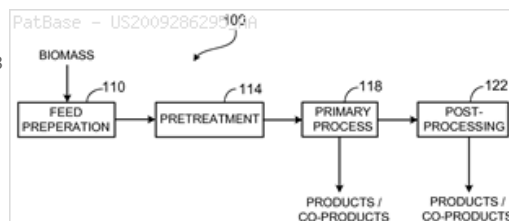
International (IPC 8-9): A01N63/00 B01F1/00 C07H3/00 C07H3/02 C07H3/04 C08B1/00 C09K3/00 C12N1/00 C12N1/16 C12N1/20 C12N1/38 C12N11/02 C12N11/12 C12P1/00 C12P19/02 C12P5/02 C12P7/00 C12P7/02 C12P7/04 C12P7/06 C12P7/10 C12P7/14 C12P7/16 C12P7/18 C12P7/20 C12P7/40 C12P7/42 C12P7/46 C12P7/52 C12P7/54 C12P7/56 C12P7/58 C12P7/64 C12R1/84 C12R1/865 (Advanced/Invention); C07H3/00 C12R1/84 C12R1/865 (Advanced/Non-invention); C07H3/00 C09K3/00 C12N1/00 C12N1/20 C12P19/00 C12P5/00 C12P7/00 C12P7/02 C12P7/14 (Core/Invention)

International (IPC 1-7): C07H3/00 C12N1/20 C12P7/06 C12P7/10 C12R1/84 C12R1/865 G01N23/00

CPC: C07H3/02 C07H3/04 C12N1/20 C12N1/38 C12P7/06 Y02E50/16 Y02E50/17 Y02E50/343 C12P5/02 C12P7/04 C12P7/10 C12P7/16 C12P7/18 C12P7/20 C12P7/40 C12P7/42 C12P7/46 C12P7/52 C12P7/54 C12P7/56 C12P7/58 C12P7/6409 C12P19/02 C12P2201/00 C12P2203/00

European: C07H3/02 C07H3/04 C12N1/20 C12P7/06 Y02E50/16 Y02E50/17

US: 1/1 252/182.12 252/182.120S 435/134 435/135 435/136 435/137 435/139 435/140 435/141 435/142 435/145 435/146 435/147 435/157 435/158 435/159 435/160 435/161 435/161S 435/162 435/162P 435/165 435/165S 435/167 435/170 435/171 435/174 435/177 435/179 435/243 435/243S 435/252 435/252.1 435/254.2 435/254.21 435/254.23 435/255.1 435/255.2 435/255.5 560/76



Family:

Publication number	Publication date	Application number	Application date
AR071837 AA	20100721	AR2009P101558	20090429
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US2014147907 AA	20140529	US20140169174	20140131
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US8709771 BB	20140429	US20130935065	20130703
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WO09134816 A9	20130808	WO2009US42000	20090428

Priority:

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Probable Assignee: XYLECO INC

Assignee(s): (std): KSILEKO INK ; MASTERMAN THOMAS CRAIG ; MEDOFF MARSHALL ; XYLECO ; XYLECO INC

Assignee(s): XYLECO INC WAKEFIELD

Inventor(s): (std): MASTERMAN THOMAS CRAIG ; MEDOFF MARSHALL ; MASTERMAN THOMAS ; MARSHALL MEDOFF ; CRAIG MASTERMAN THOMAS ; MASTERMAN CRAIG THOMAS ; MASTERMAN TOMAS KREJG ; THOMAS CRAIG MASTERMAN

Inventor(s): MEDOFF MARSHALL BROOKLINE ; MASTERMAN THOMAS CRAIG ROCKPORT ; CRAIG THOMAS MASTERMAN ; MASTERMAN CRAIG THOMAS ROCKPORT

Agent(s): SPRUSON AND FERGUSON; STOLMAR AND PARTNER PATENTANWAELTE PARTG MBB; SIMPSON MARK GEOFFREY; POTTER CLARKSON LLP; VON FUENER NICOLAI; DE ELZABURU ALBERTO; PONS ANGEL; EVROMARKPAT; FULYA SUEMERALP; FISH AND RICHARDSON PC; LEBER PATENT LAW PC; CELIA H; FRANCESCO DE REGE; LEBER IP LAW; LEBER CELIA H

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ

4) Family number: 62791570 (US2016186072A)

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Title: CONVERSION OF BIOMASS, ORGANIC WASTE AND CARBON DIOXIDE INTO SYNTHETIC HYDROCARBONS

Abstract: A process and system for producing a synthetic hydrocarbon having a desired H/C ratio is disclosed. Organic material is biochemically digested in a two stage biodigester for separately producing a hydrogen containing biogas substantially free of methane in a first stage and a methane containing biogas in a second stage. The methane containing biogas is reformed in a first reformer to generate hydrogen gas and carbon monoxide gas, which are then combined in a mixer with the hydrogen containing biogas into a syngas in amounts to achieve in the syngas an overall H/C ratio substantially equal to the desired H/C ratio. The syngas is reacted with a catalyst in a second reformer, a Fischer-Tropsch (FT) reactor, to produce the hydrocarbon. Using a two stage biodigester allows for the generation of separate hydrogen and methane streams, a more economical generation of the FT syngas and reduced fouling of the FT catalyst.

Classifications:**International (IPC 8-9):** C01B3/34 C02F11/04 C07C1/04 C10G1/00

C10G2/00 C10G50/00 C10L1/04 C12M1/00 C12M1/107 C12P3/00

C12P5/02 D21C1/02 D21C1/10 (Advanced/Invention);

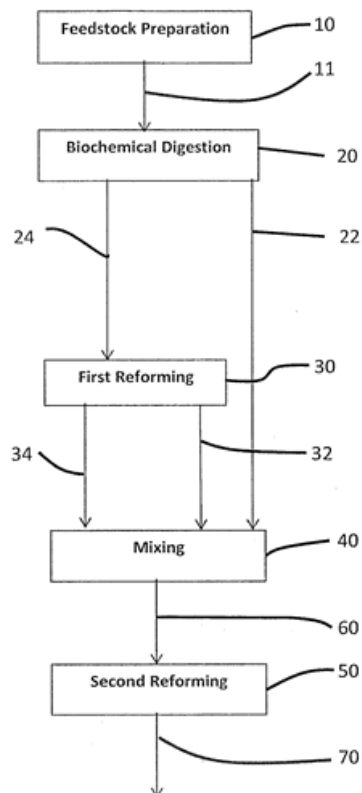
C02F11/04 (Advanced/Non-invention)

CPC: C10G2/34 C10G2/32 C12M23/58 C12P3/00 C12P5/023 C12M21/04

C12M21/12 C12M43/00 Y02E50/343 Y02P30/30

US: 1/1 435/167 435/294.1

PatBase - US2016186072_AA

**Family:**

Publication number	Publication date	Application number	Application date
AR103275 AA	20170426	AR2015P104288	20151223
CA2971889 AA	20170622	CA20152971889	20151222
EP3237585 A1	20171101	EP20150871395	20151222
US2016186072 AA	20160630	US20150978893	20151222
US2018094195 AA	20180405	US20170725482	20171005
US9816035 BB	20171114	US20150978893	20151222
WO16101076 A1	20160630	WO2015CA51366	20151222

Priority:

US20140096146P 20141223

US20150978893 20151222

WO2015CA51366 20151222

US20170725482 20171005

Probable Assignee: D SALT AND ASSOCIATES LTD**Assignee(s):** (std): GREENFIELD SPECIALTY ALCOHOLS INC**Assignee(s):** HAFEZ HISHAM MOHAMED ; SEHDEV RANJIT ; LEHOUX RICHARD ROMEO ; SALT DAVE ; D SALT AND ASSOCIATES LTD**Inventor(s):** (std): SEHDEV RANJIT ; HAFEZ HISHAM MOHAMED ; LEHOUX RICHARD ROMEO ; SALT DAVE ; DAVE SALT ; RANJIT SEHDEV ; RICHARD ROMEO LEHOUX ; HISHAM MOHAMED HAFEZ**Agent(s):** BORDEN LADNER GERVAIS LLP; HERZOG FIESSER AND PARTNER PATENTANWALTE PARTG MBB; FRITZ JOACHIM T ET AL**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW

5) Family number: 48694764 (US2011081689A)

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Title: PROCESS FOR THERMAL-MECHANICAL PRETREATMENT OF BIOMASS

Abstract: Disclosed is a process for the thermal-mechanical pretreatment of biomass. The process includes subjecting a biomass feedstock including fibers containing cellulose, hemicellulose and lignin, to thermal reaction under conditions exceeding atmospheric pressure, at a temperature exceeding ambient temperature, at a predetermined moisture content and for a predetermined amount of time. Subsequently, the pressure of said thermal reaction is reduced under conditions resulting in explosive decompression of said biomass. The decompressed biomass is then subjected to axial shear forces to mechanically reduce the size of the fibers of the biomass to obtain treated biomass. The resultant treated biomass has a high level of enzymatic digestability and a low concentration of degradation products.

Classifications:

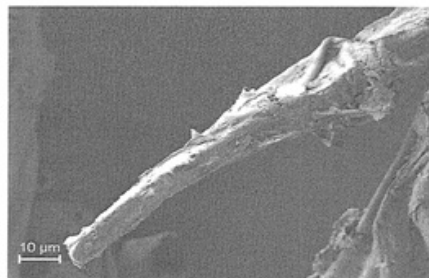
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F23G5/027 (Advanced/Invention)

CPC: C08H8/00 C12P19/02 D21C1/02 D21C1/04 C12P7/10 C12P2201/00
Y02E50/16 C13K1/02

European: C12P7/10 M12P201/00 Y02E50/16

US: 435/105 435/105P 435/165 435/165S 435/41 435/41S

PatBase - US2011081689_AA

**Family:**

Publication number	Publication date	Application number	Application date
BRP11002758 A2	20121030	BR2010PI02758	20100602
US2011081689 AA	20110407	US20100899441	20101006
WO11044282 A2	20110414	WO2010US51691	20101006
WO11044282 A3	20111013	WO2010US51691	20101006
WO11044292 A2	20110414	WO2010US51705	20101006
WO11044292 A3	20110818	WO2010US51705	20101006

Priority:

US20090249181P 20091006 US20100899441 20101006

Probable Assignee: BLUE SUGARS CORP

Assignee(s): (std): FLANEGAN KEITH C ; HARSTAD DENNIS A ; HARSTAD DENNIS A ; KL ENERGY CORP ; SCHULTZE JAMES D ; LITZEN DAVID B

Assignee(s): BLUE SUGARS CORP

Inventor(s): (std): SCHULTZE JAMES D ; HARSTAD DENNIS A ; LITZEN DAVID B ; FLANEGAN KEITH C ; HARSTAD DENNIS A

Inventor(s): KEITH C FLANEGAN ; JAMES D SCHULTZE ; DENNIS A HARSTAD ; DAVID B LITZEN

Agent(s): SULLIVAN ROBERT C JR; SULLIVAN JR ROBERT C

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

6) Family number: 47930866 (US2010326610A)

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Title: SYSTEM AND METHOD FOR CONTINUOUSLY TREATING BIOMASS

Abstract: A continuous biomass pretreatment system and method is provided. The system comprises a pipe reactor having an input end, an output end, an interior and an exterior. The pipe reactor does not have a mixing component that passes from the interior to the exterior and rotates with respect to the pipe. The system further comprises a pump in communication with the input end of the pipe reactor, a valve in communication with the output end of the pipe reactor, and a flash vessel having an input opening in communication with the output of the valve.

Classifications:

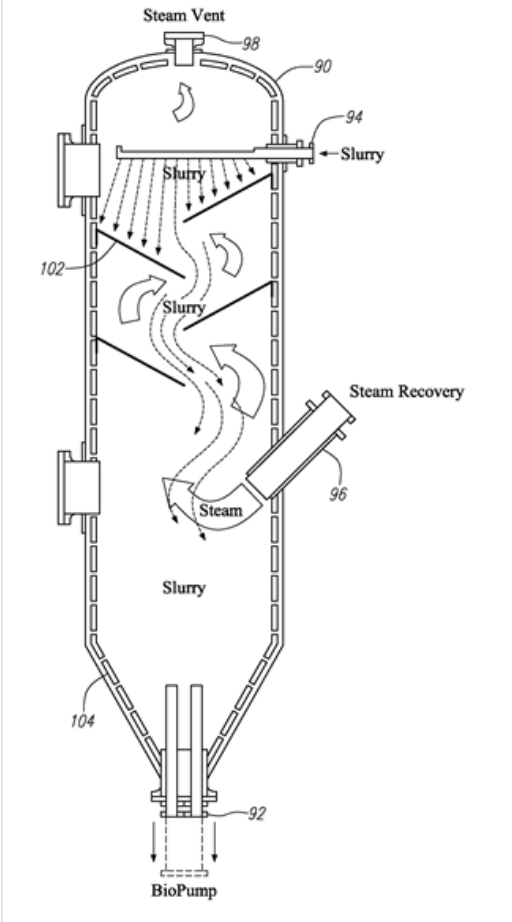
International (IPC 8-9): C10L5/00 D21C3/26
D21C7/00 (Advanced/Invention)

International (IPC 1-7): B01J8/00 C10L1/00

CPC: D21C3/26 D21C7/00

European: D21C3/26 D21C7/00

US: 162/17 162/17P 162/237 162/237S



Family:

Publication number	Publication date	Application number	Application date
AR077287 AA	20110817	AR2010P102314	20100629
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WO11002822 A1	20110106	WO2010US40499	20100629

Priority:

US20090493452 20090629

Probable Assignee: GEOSYNFUELS LLC

Assignee(s): (std): BATH MURRAY D ; GEOSYNFUELS LLC ; HARVEY J TODD

Assignee(s): HARVEY J

Inventor(s): (std): HARVEY J TODD ; BATH MURRAY D

Inventor(s): HARVEY J

Agent(s): JONES DAY; RANDALL DAVID A

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

7) Family number: 43679794 (US2009221814A)

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Title: SYSTEM AND METHOD FOR PREEXTRACTION OF HEMICELLULOSE THROUGH USING A CONTINUOUS PREHYDROLYSIS AND STEAM EXPLOSION PRETREATMENT PROCESS

Abstract: A system has been developed for pretreating cellulosic biomass feed stock including: a first pressurized reactor receiving the feed stock, wherein the feed stock undergoes hydrolysis in the first pressurized reactor; a sealing device having a first pressurized coupling to a feedstock discharge port of the first pressurized reactor, and a second pressurized coupling to a second pressurized reactor; a drain for a liquid including dissolved hemi-cellulosic material extracted from the feed stock in at least one of the first pressurized reactor and the sealing and extraction device; the second pressurized reactor assembly receiving the pressurized feed stock from the sealing device at a pressure substantially greater than the pressure in the first pressurized reactor, wherein cells of the feed stock are infused with water in the second pressurized reactor, and an expansion device downstream of the second pressurized reactor assembly, wherein the expansion device rapidly releases the pressure of the feed stock discharged from the second pressurized reactor such that the feed stock undergoes a steam explosion reaction.

Classifications:

International (IPC 8-9): B01J19/00 B09B3/00 C07H1/08 C08B1/00 C08B16/00 C12P19/04 C12P21/04 C13K1/02 D21B1/36 D21C1/02 D21C3/22 D21C3/26 D21C7/00 (Advanced/Invention);

C08B1/00 C12P19/04 D21B1/36 D21C1/02 (Advanced/Non-invention);
B01J19/00 C07H1/00 D21B1/00 D21B1/36 D21C1/00 D21C1/02
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International (IPC 1-7): D21B1/36 D21C1/02 D21C3/22 D21C3/26
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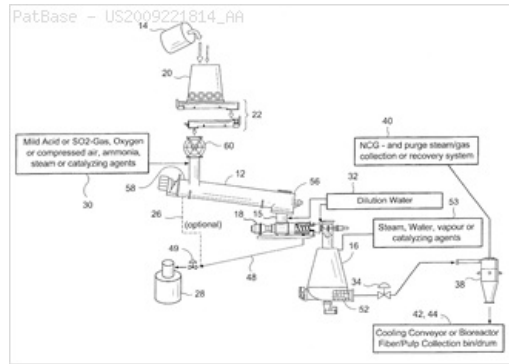
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JP Facet: ZAB



Family:

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JP2011513052 T2	20110428	JP20100548863T	20090226
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Priority:

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EP20120171991 20090226	JP20100548863 20090226	JP20100548863T 20090226
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Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

8) Family number: 47543491 (US2012043194A)

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Title: METHOD AND APPARATUS FOR THE ENERGY DENSIFICATION OF A MATERIAL IN THE FORM OF DIVIDED SOLIDS, WITH A VIEW TO OBTAINING PYROLYSIS OILS FOR ENERGY PURPOSES

Abstract: A method and installation for energy densification of a material to obtain pyrolytic oils for energy. The method includes preconditioning the material by heating and drying to raise the material temperature close to 100 degrees centigrade and a relative humidity not exceeding about 10 percent; pyrolyzing the material that is subsequently caused to flow through a substantially hermetic reactor containing at least one transfer screw or vibrating tube heated by the Joule effect, the material heated progressively in the range of 300 degrees centigrade to 850 degrees centigrade, the electrical power passing through the transfer screw or the vibrating tube for providing heating regulated as a function of the material in order to obtain the desired temperature level during the transit time of the material through the reactor; extracting pyrolysis gas from a high portion of the reactor for rapid recondensation in a vertical condenser; and recovering pyrolytic oils from a low portion of the vertical condenser.

Classifications:

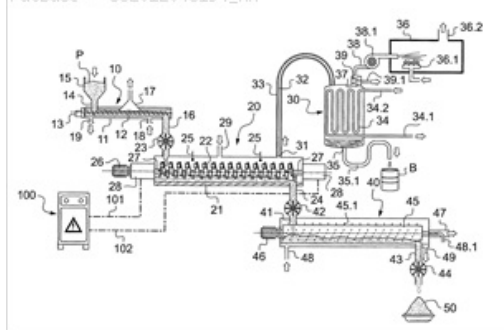
International (IPC 8-9): C10B19/00 C10B53/00 C10B53/02 C10B7/10 C10C5/00 C10G1/00 (Advanced/Invention)

CPC: C10B7/10 C10B53/02 C10C5/00 Y02E50/14

European: C10B53/02 C10B7/10 C10C5/00 Y02E50/14

US: 1/1 201/10 201/10P 202/84 202/84S

PatBase - US2012043194_AA



Family:

Publication number	Publication date	Application number	Application date
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Priority:

FR20090002214 20090507 EP20100715896 20100504 WO2010EP56051 20100504

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Inventor(s): (std): PHILIPPE SAJET ; OLIVIER LEPEZ ; SAJET PHILIPPE ; LEPEZ OLIVIER

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Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

9) Family number: 28955161 (WO04000929A1)

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Title: BIODEGRADABLE GRAFTED BLOCK COPOLYMER MATRIX COMPOUND HAVING HIGH CONTENT OF STEAM-EXPLODED BIOMASS, A PRODUCING METHOD THEREOF, AND METHOD OF PRODUCING MOLDED ARTICLE USING THE SAME

Abstract: The present invention relates to a biodegradable grafted block copolymer matrix compound of slurry type containing biomass and grain powders as main components, and also to also to production and molding methods thereof. This matrix compound has a water-plasticizing property, a curing property according to dehydration crosslinking caused by polycondensation occurring in a drying process, and a composite characteristic of thermoplastic resin.

Classifications:

International (IPC 8-9): B27N1/00 B29C47/00 C08H8/00 C08K7/02 C08L29/04 C08L3/02 C08L97/02 (Advanced/Invention); B27N1/00 B29C47/00 C08K7/02 C08L1/28 C08L29/04 C08L3/02 (Advanced/Non-invention); B27N1/00 B29C47/00 C08K7/00 C08L29/00 C08L3/00 (Core/Invention)

International (IPC 1-7): B27N1/00 B29C47/00 B65D1/00 C08K7/02 C08L1/00 C08L29/04 C08L3/02 C08L97/02

CPC: C08H8/00 C08L1/28 C08L3/02 C08L29/04 C08L97/02 C08L2201/06 B27N1/02 C08J2300/22 C08K7/02 C08L101/14 B29C47/00 B29K2995/006

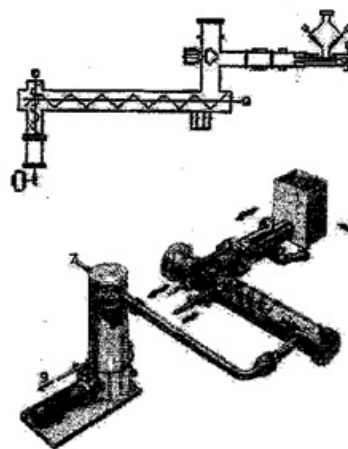
European: C08H8/00 C08L97/02 M08L1/28 M08L201/06 M08L29/04 M08L3/02

PatBase - WO04000929_A1

WO 200400929

FIG. 1A

Fig 1.



Family:

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WO04000929 A1	20031231	WO2003KR01188	20030618

Priority:

KR20020034424 20020619 KR20020034425 20020619 WO2003KR01188 20030618

Probable Assignee: NEXSOL TECH INC

Assignee(s): (std): KIM FIJEAU ; NEXSOL TECH INC ; NEXSOL TECHNOLOGIES INC

Inventor(s): (std): KIM FIJEAU ; KIM HWI JU

Inventor(s): FIJEAU KIM

Designated states: AE AL AM AT AU AZ BA BE BG BR BY BZ CA CH CN CU CY CZ DE DK DZ EE ES FI FR GB GR HR HU ID IE IL IN IS IT JP KE KG KP KZ LK LT LU LV MC MN MW MX NL NO NZ PH PL PT RO RU SE SG SI SK TJ TM TR UA US UZ VN YU ZA