

Base : FAMPAT**SEARCH STRATEGY****SS Results**

20	37	19 AND 7
19	108	18 AND 5
18	281	17 AND 4
17	966	16 AND 2
16	6292	1 AND 14
15	2	14 AND 13
14	30202	(D21C)/IPC
13	82	12 NOT GERMANIUM
12	84	11 NOT LATERITE
11	85	10 AND 7
10	171	9 AND 6
9	1167	8 AND 5
8	3722	3 AND 4
7	5601682	(CONDITION+ OR RETROFIT)/TI/AB/IW/OBJ/ADB/ICLM
6	144897	(STRONG ACID+ PHOSPHORIC ACID OR HYDROCHLORIC ACID OR MURIATIC ACID)/TI/AB/IW/OBJ/ADB/ICLM
5	665250	(PRECIPITA+ OR HAST+ OR PRECIPITAN+)/TI/AB/IW/OBJ/ADB/ICLM
4	3579118	(FILTRATI+ OR FILTER+ OR LEAK+ OR SEEP+ OR PERCOLATI+)/TI/AB/IW/OBJ/ADB/ICLM
3	12823	1 AND 2
2	1527353	CAUSTIC OR SODA SOLUTION OR STRONG OR HEAVY SODA/TI/AB/IW/OBJ/ADB/ICLM
1	134852	((RECOVER+ OR RETRIEV+ OR RECUPERATE+ OR RALLY OR PICKUP OR RECYCL+ OR RECLAMAT+)/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX AND (CELLULOSE OR CELULOSA OR PULP)/TI/AB/IW/CLMS/DESC/ODES/OBJ/ADB/ICLM/KEYW/TX AND (RESIDU+ OR WAST+)/TI/AB/IW/OBJ/ADB/ICLM)

37 Documents

Publication numbers	Title	Current assignees
WO9322492 A1	Production of cellulose by the soda-anthraquinone process (sap) with recovery of the boiling chemicals	GRANIT S A
CN102677510 A	Method for separating cellulose and lignin from plant fiber raw material by utilizing ion liquid	INSTITUTE OF PROCESS ENGINEERING CHINESE ACADEMY OF SCIENCES
CN101768887 A	Circular utilization method of straw in pulping and papermaking process	SHANDONG TRALIN PAPER
CN104863004 A	Cotton brei pulp preparation and pollution treatment method	CHINA NATIONAL PULP & PAPER RESEARCH INSTITUTE
TW201400670 A	Chemical pulping method	BEIJING INSIGHT BIOMASS
CN106638089 A	Method for preparing dissolving pulp and other high-value-added products by crop straws	JINAN METER DUO TAN NEW ENERGY TECHNOLOGY
CA1229955 A	Method for producing pulp stock for paper making from printed unselected waste paper	CLEMENT JEAN M
US2774666 A	Recovery of cooking liquor from spent soda pulping liquors	STERLING DRUG
CN1386927 A	Technological system for producing environment protection type paper pulp	LI JUN
CN105316973 A	Preparation process of pulping prehydrolysis liquid based on advanced oxidation-nanofiltration technology	QINGDAO INSTITUTE OF BIOENERGY & BIOPROCESS TECHNOLOGY CAS
CN1147042 A	Technology for making pulp by forage alkaline process and method for disposing its produced sewage and its system device	LI WENHAI
CN101666051 A	Method for producing sodium humate and by-product paper pulp by using cassava dregs as raw materials	GUANGXI BEIGUO BIO SCIENTIFIC
CN105672012 A	Method for simultaneously extracting hemicellulose, cellulose and lignin from biomass material	CITIC GEYI CIRCULAR ECONOMY
CN105350369 A	Preparation process of lignocellulose pulping pre-hydrolysis liquid having efficient fermentation capability	QINGDAO INSTITUTE OF BIOENERGY & BIOPROCESS TECHNOLOGY CAS
CN1563568 A	Zero discharge technique for treating waste fluid from paper mill by using subtraction method	Wen Zhanjun
CN102943404 A	Black liquor treatment method combining lignin extraction and synthesis gas production	GUANGXI UNIVERSITY
CN1619055 A	Highly pure lignin, high efficiency fiber separating equipment	LUO XUEGANG

Publication numbers	Title	Current assignees
	system	
CA2898449 A1	Method for producing high purity lignin	VALMET
CN101424056 A	Atmospheric pre-treatment method of plant fiber material	CHEN, PEIHAO
CN203700850U U	Cotton linter KOH stewing and pulping system	XUE RUNLIN
FI8101894 L	A method for the delignification of wood and other ligno-cellulosic products	BATTELLE MEMORIAL INSTITUTE
CN1141983 A	Method for comprehensive control and treatment of black liquor from alkali paper-making	LI BAOMIN
US20170355723 A1	Method for producing high purity lignin	VALMET
CN103306154 A	Treatment and utilization method of pulping black liquor	QIN CAIDONG
CN107574701 A	Method for extracting high-purity hemicelluloses from corncobs	INSTITUTE OF CHEMICAL INDUSTRY OF FOREST PRODUCTS CHINESE ACADEMY OF FORESTRY
WO201366196 A1	Method for removal of toxic waste from timber	SOLRAY HOLDINGS
CN104498716 A	Energy-conserving and environment-protecting regenerated lead smelting and paper pulp cogeneration technology	HEFEI UNIVERSITY OF TECHNOLOGY
CN1210093 A	Method for closed circulation treating waste water, waste gas in papermaking plant	ZHAO DESHAN
CN1239166 A	Process for causticizing green solution of alkali recovered from black liquid of paper-making	AI TIANZHAO
CN101579689 A	Complete system of recycling treatment of city household garbage and a method thereof	SHAO DAODE
CN1068613 A	Treating method for black and white liquor of coda pulp	ZHANGZHOU NORMAL UNIVERSITY COLLEGE, ...
CN102321184 A	Resource utilization technology of fresh peltate yam	WUHAN TEXTILE UNIVERSITY
FI201100087 A0	Separation of lignin from plant material	CEREFI
CN103588903 A	Green process for separating biomass raw materials of wheat straws	HENAN UNIVERSITY OF SCIENCE & TECHNOLOGY
IL-52551 A	Process for obtaining xylan and fibrin from vegetable raw material containing xylan	SUOMEN SOKERI, ...
CN1256253 A	Biological acid process for separating lignin from alkaline papermaking black liquor	INSTITUTE OF CHEMICAL METALLURGY CHINESE ACADEMY OF SCIENCES
WO200356904 A2	Transgenic plants expressing CIVPS or intein modified proteins and related method	AGRIVIDA

Family 1/37 - FAMPAT - ©Questel

Title

(EP-593743)

Production of **cellulose** by the soda-anthraquinone process (sap) with **recovery** of the boiling chemicals**Publication data including kind & date**

WO9322492	A1	1993-11-11	WO9322492			
CA2112802	A1	1993-11-11	CA2112802			
AU4038193	A	1993-11-29	AU9340381			
FI940013	A	1994-01-03	FI9400013			
FI940013	A0	1994-01-03	FI9400013			
EP0593743	A1	1994-04-27	EP-593743			
JPH06509850	A	1994-11-02	JP06509850			
BR9305510	A	1995-03-28	BR9305510			
BRPI9305510	A1	1995-03-28	BRPI9305510			
AU663784	B2	1995-10-19	AU-663784			
CH686682	A5	1996-05-31	CH-686682			
NZ251963	A	1996-12-20	NZ-251963			
US5595628	A	1997-01-21	US5595628			
EP0593743	B1	1998-01-14	EP-593743			
AT162245	T	1998-01-15	ATE162245			
JP2709192	B2	1998-02-04	JP2709192			
DE59307986	D1	1998-02-19	DE59307986			
ES2114607	T3	1998-06-01	ES2114607			
DK0593743	T3	1998-09-14	DK-593743T			
BRPI9305510	B1	2001-09-04	BR199305510			
CA2112802	C	2005-07-19	CA2112802			
FI115845	B	2005-07-29	FI-115845			

Abstract

(EP-593743)

For the production of **cellulose** from wood and annual plants, a boiling process is proposed in which the boiling liquor contains free soda lye and sodium salts of the alkylbenzole sulphonic acids or aromatic and aliphatic carboxylic acids. Delignification is reinforced on the addition of anthraquinone or its derivatives to the boiling liquor. There is no need to restrict the quantities of the anthraquinone additive owing to its price since anthraquinone resists wet oxidation and can be **recycled** in the boiling process. The solubility and hence the effect of the anthraquinone is enhanced by the use of sulphonic acid salts. In order to **recover** the processing chemicals contained in the black liquor it is proposed that the dissolved lignin be **precipitated** with mineral or carboxylic acid, the hemi-celluloses be separated by ultra-**filtration** and the resins by extraction, where appropriate, and the remaining organic components except for the sulphonic and carboxylic acids salts be burned in the aqueous phase with air and/or oxygen. The chemical solution freed from the wood decomposition products may be returned to the liquor after caustification of the carbonates and, after the partial crystallisation of the aliphatic carboxylic acid salts, made available in the circuit for **cellulose** production. The sodium acetate isolated by crystallisation can be broken down into acetic acid and sodium hydroxide by diaphragm electrolysis. The soda lye is returned to the boiling process and the acetic acid treated separately.

Inventors

GORDON OTTO W

PLATTNER ERIC

DOPPENBERG FRANK

Latest standardized assignees - inventors removed

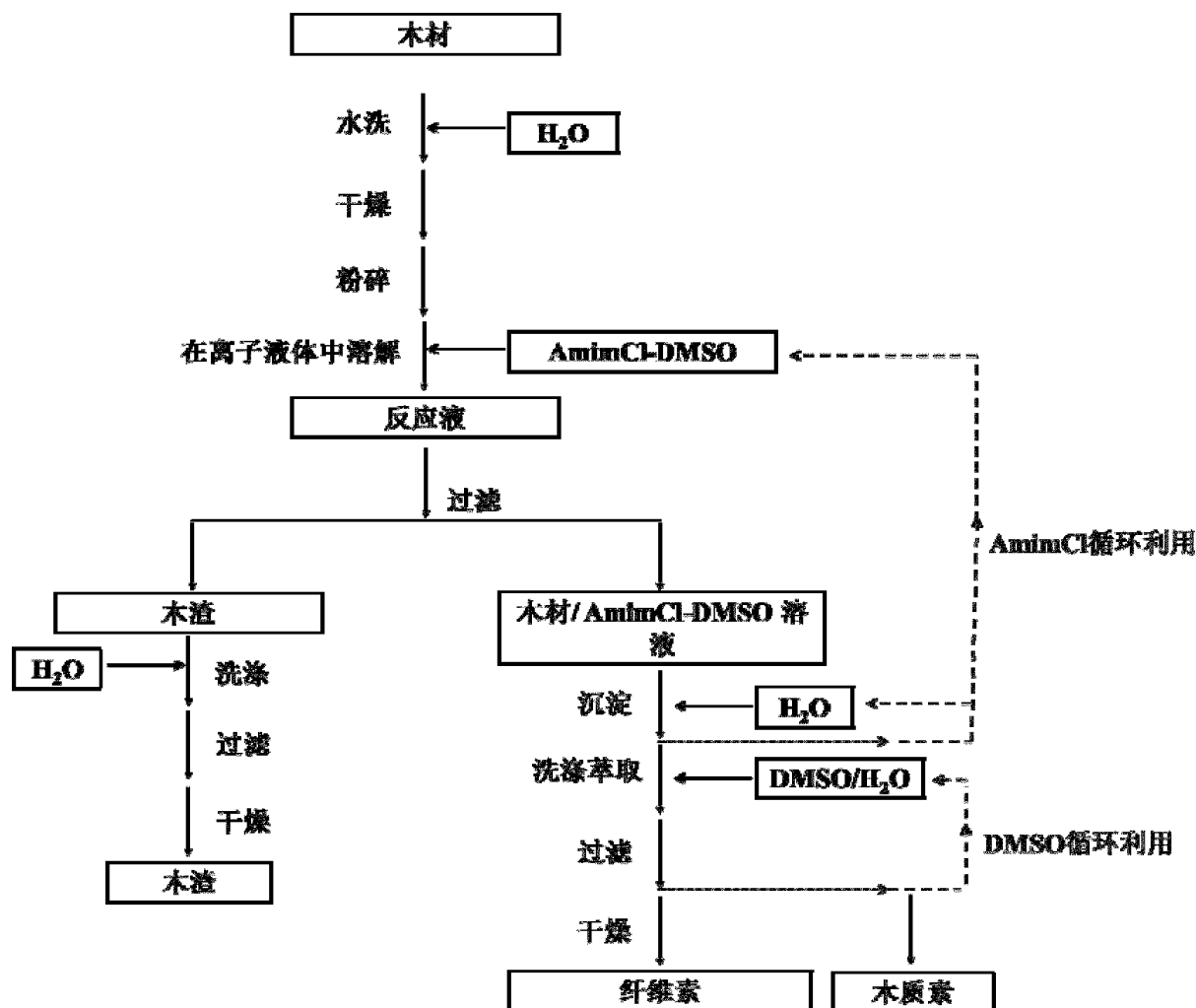
GRANIT S A

Family 2/37 - FAMPAT - ©Questel

Title

(CN102677510B)

Method for separating cellulose and lignin from plant fiber raw material by utilizing ion liquid

Images**Publication data including kind & date**

CN102677510	A	2012-09-19	CN102677510
CN102677510	B	2014-12-24	CN102677510B

**Abstract**

(CN102677510B)

The invention relates to the field of treatment of plant fibers and particularly relates to a method for separating cellulose and lignin from a plant fiber raw material by utilizing ion liquid. According to the invention, the method comprises the following steps of: 1) mixing DMSO (Dimethylsulfoxide) and the ion liquid according to a mass ratio of 1: 4-9 to be used as a solvent, and adding the plant fiber raw material; 2) dissolving at 80 to 140 DEG C for 4-48 hours to obtain a reaction mixed liquid; 3) filtering and separating the reaction mixed liquid by a stainless steel filter screen or a nylon filter cloth, adding water into the obtained filtrate, and depositing a mixed extract of the cellulose and the lignin; 4) washing and extracting a mixed extract of the cellulose and the lignin by a water/DMSO mixed solvent, and filtering to obtain mixed liquid of a cellulose solid and lignin/DMSO/water; 5) drying the cellulose solid to obtain a cellulose product; and 6) decompressing and distilling the mixed liquid of the cellulose/DMSO/water to obtain a cellulose product. The method, provided by the invention, is simple, feasible and high in purity of the obtained cellulose.

Inventors

LI HUIQUAN
WANG XUEJING

TANG QING

INSTITUTE OF PROCESS ENGINEERING CHINESE ACADEMY OF SCIENCES

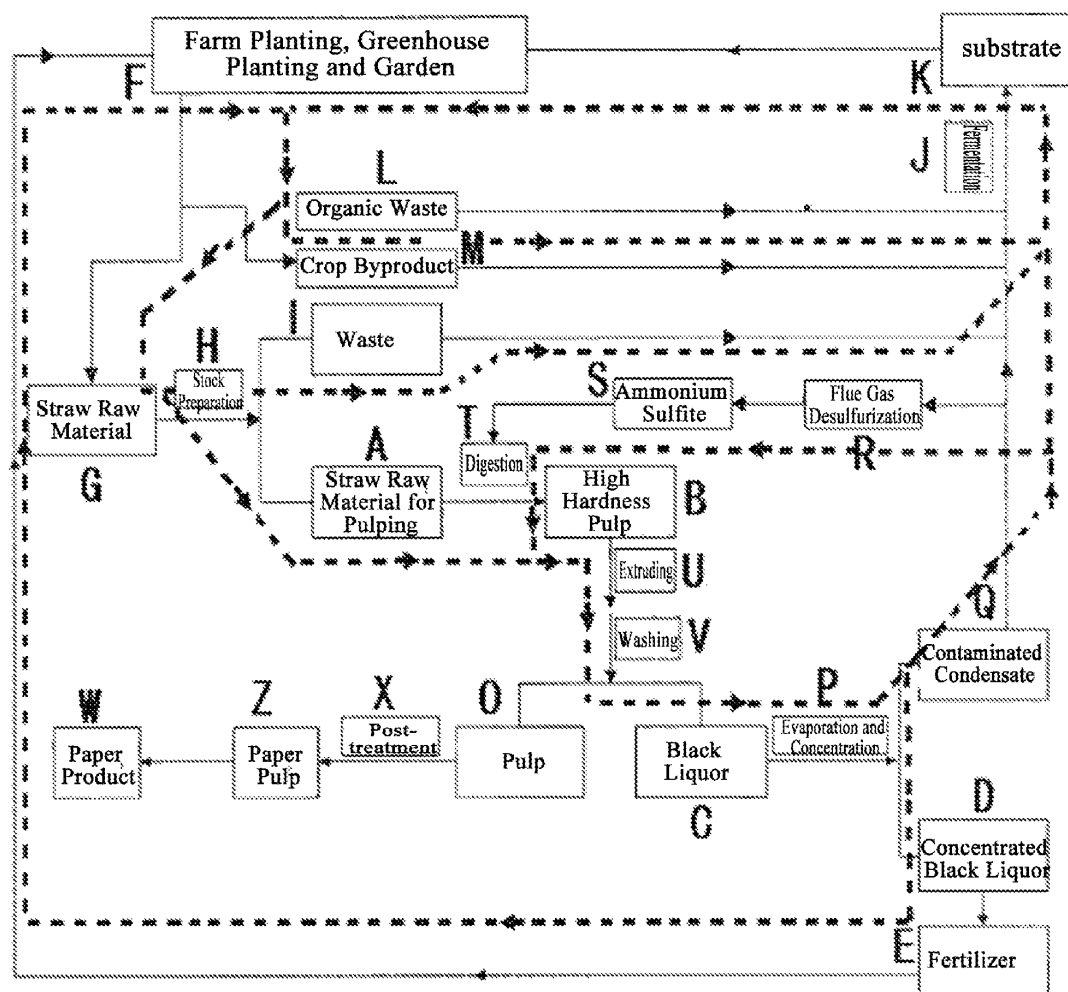
Family 3/37 - FAMPAT - ©Questel

Title

(WO2011113329)

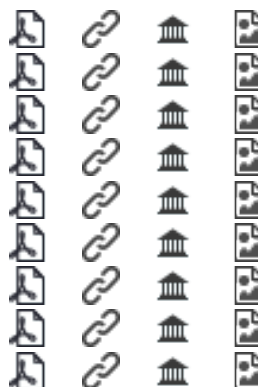
Circular utilization method of straw in pulping and papermaking process

Images



Publication data including kind & date

CN101768887	A	2010-07-07	CN101768887
WO2011113329	A1	2011-09-22	WO2011113329
CA2792315	A1	2011-09-22	CA2792315
CN101768887	B	2012-12-26	CN101768887B
US20120325421	A1	2012-12-27	US20120325421
BR112012023453	A1	2013-04-16	BR112012023453
US8778135	B2	2014-07-15	US8778135
CA2792315	C	2015-04-21	CA2792315
BR112012023453	A2	2016-05-24	BR112012023453



Abstract

(WO2011113329)

A circular utilization method of straw in a pulping and papermaking processes comprises the following steps of: obtaining straw raw material for pulping and its **waste** through stock preparation; obtaining primary **pulp** by digesting the straw raw material according to the ammonium sulfite method; obtaining **pulp** and concentrated black liquid by extruding the primary **pulp**; obtaining paper **pulp** for preparing a paper product and diluted black liquid by washing and post-processing; mixing the concentrated black liquid and the diluted black liquid, and then evaporating and concentrating; obtaining contaminated condensate by reclaiming the evaporated liquid, and using a **residual** concentrate as raw material of fertilizer or the concentrated black liquid for preparing a fertilizer; mixing the contaminated condensate with one or more of the group of the **waste** material obtained from stock preparation, a crop byproduct or organic **waste**, and obtaining base material or fertilizer by fermenting the nitrogen source of the contaminated condensate or ammonium sulfite, or using the contaminated condensate for desulfurizing flue gas, wherein ammonia and flue gas are reacted to obtain the ammonium sulfite as a digestion agent; and using the **recycled** water from the mid-phase water processing to corresponding phases in the whole pulping process.

Inventors

LI HONGFA

SONG MINGXIN

CHEN SONGTAO

YANG JIHUI

GUO LIANGJIN

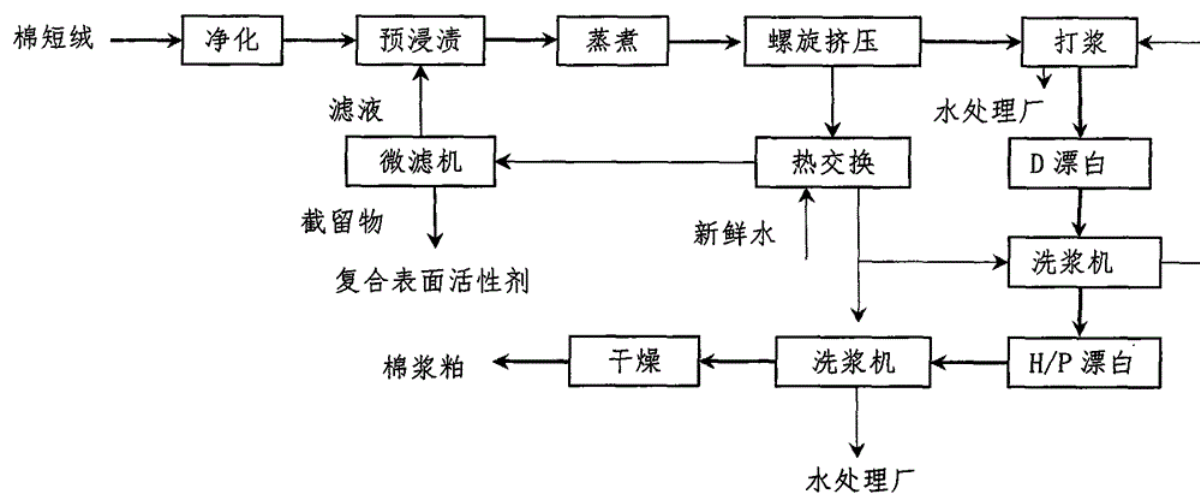
Latest standardized assignees - inventors removed

SHANDONG TRALIN PAPER

Family 4/37 - FAMPAT - ©Questel

Title

(CN104863004)

Cotton brei **pulp** preparation and pollution treatment method**Images****Publication data including kind & date**

CN104863004	A	2015-08-26	CN104863004
CN104863004	B	2017-04-12	CN104863004B

**Abstract**

(CN104863004B)

The invention relates to a cotton brei **pulp** preparation and pollution treatment method, belonging to the **pulp** making paper making or textile field. The method specifically includes the following steps: cotton brei **pulp** is obtained by deep purification, preimpregnating, steaming and cooking, pulping, bleaching and drying of cotton linter, steaming and cooking thick **waste** liquid is cooled and **filtered** to separate a composite surfactant mainly including sodium pectate, sodium cotton alcohol, sodium stearate and oligosaccharides and the like, then the steaming and cooking thick **waste** liquid is **recycled** for

steaming and cooking, the separated composite surfactant can be used in cement to play the role of water reducing, retarding and dispersing and enhancement, the pulping and bleaching and washing wastewater is treated by a wastewater treatment system for up-to standard discharging. The advantage of the cotton brei **pulp** preparation and pollution treatment method is that: thick **waste** liquid and washing water in the process of cotton brei **pulp** preparation are treated alone, organic matters and **residual** alkali in the thick **waste** liquid are effectively used, the operation load of the **waste** water treatment system is greatly reduced, and stable and standard treatment can be achieved.

Inventors

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ZHANG SHENGYOU

LIU WEN

Latest standardized assignees - inventors removed

CHINA NATIONAL PULP & PAPER RESEARCH INSTITUTE

Family 5/37 - FAMPAT - ©Questel

Title

(WO201400420)

Chemical pulping method

Images



Publication data including kind & date

TW201400670	A	2014-01-01	TW201400670				
CA2877756	A1	2014-01-03	CA2877756				
WO2014000420	A1	2014-01-03	WO201400420				
CN103510418	A	2014-01-15	CN103510418				
US20150176207	A1	2015-06-25	US20150176207				
JP2015525313	A	2015-09-03	JP2015525313				
CN103510418	B	2016-03-30	CN103510418B				
RU2014153676	A	2016-08-20	RU2014153676				
TWI585267	B	2017-06-01	TWI585267				
RU2642417	C2	2018-01-24	RU2642417				
US9951476	B2	2018-04-24	US9951476				
JP6363596	B2	2018-07-25	JP6363596				
CA2877756	C	2018-08-28	CA2877756				
MY167475	A	2018-08-29	MY-167475				

Abstract

(WO201400420)

The present invention provides a pulping method. **Caustic** soda is replaced with cheap lime to manufacture **pulp** in high efficiency, and meanwhile complexation, flocculation and acid-base neutralization of aluminum sulfate are further utilized, so as to **recycle** effective ingredients in a black liquid, achieve a yield approximate to a mechanical **pulp** yield, obtain quality of the chemical **pulp**, implement cyclic utilization of the black liquid and solve the pollution thereof.

Inventors

YIN YINGWU

WAN PENG

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SUN XIANGXIANG

ZHANG LINGYAN

Latest standardized assignees - inventors removed

BEIJING INSIGHT BIOMASS

Family 6/37 - FAMPAT - ©Questel

Title

(CN106638089)

Method for preparing dissolving **pulp** and other high-value-added products by crop straws**Publication data including kind & date**

CN106638089	A	2017-05-10	CN106638089
CN106638089	B	2018-01-30	CN106638089B

**Abstract**

(CN106638089B)

The invention discloses a method for preparing dissolving **pulp** and other high-value-added products by crop straws, and belongs to the technical field of biology. The method includes the steps: pre-extracting hemicellulose and ash inorganic salt by the aid of alkali liquor; hydrolyzing protein and starch by the aid of enzyme method; extracting lignin and **residual** hemicellulose by the aid of alkali solution; removing step by step the **residual** hemicellulose, the lignin and dissolved out fatty substances by the aid of hydrogen peroxide and organic solvents; keeping inert gas environments in a cooking boiler to prevent oxidation reaction of components such as the dissolving **pulp** and esterification reaction of acetyl and the like; avoiding peeling reaction, dehydration reaction, hydrolysis reaction and the like at the high temperature of the components such as the dissolving **pulp** by the aid of low cooking temperature; providing higher pressure by inert gas to ensure seven technical measures such as effective permeability of the alkali liquor between cell walls of the straws to obtain superior dissolving **pulp** of the straws. According to the method, the straws are furthest comprehensively utilized, the dissolving **pulp**, the hemicellulose and the lignin are high in extraction rate and quality and good in integrity, and liquid fertilizers can be obtained.

Inventors

CAO JIXIANG

Latest standardized assignees - inventors removed

JINAN METER DUO TAN NEW ENERGY TECHNOLOGY

Family 7/37 - FAMPAT - ©Questel

Title

(CA1229955)

Method for producing **pulp** stock for paper making from printed unselected **waste** paper**Publication data including kind & date**

CA1229955	A	1987-12-08	CA1229955
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**Abstract**

(CA1229955)

: A **waste** paper **recycling** process relates to the treatment of a mixture of **waste** paper containing non-cellulosic contraries and printing inks, in order to release the contraries from the fibers and further to separate them from the stock in order to produce re-usable **pulp** for the production of paper and board. The invention has to do with new and useful improvements in methods for first removing the non-ink contraries from the fibrous mass and second releasing and then removing the ink particles from the said fibrous mass. The invention is directed to the treatment of the fiber slurry produced during the ink separation stage, after the ink releasing stage has been applied. One aim of the process is to allow both the use of the fibers and the mineral fillers contained in that slurry, for **pulp** and board making, and the use of the solids-free water contained in the same slurry as the washing liquid in the previous ink-separation treatment, thus closing the fibers and the water circuits. This process includes chemical and thermo-mechanical treatments, starting under alkaline conditions, which may become neutral at the end of the process.

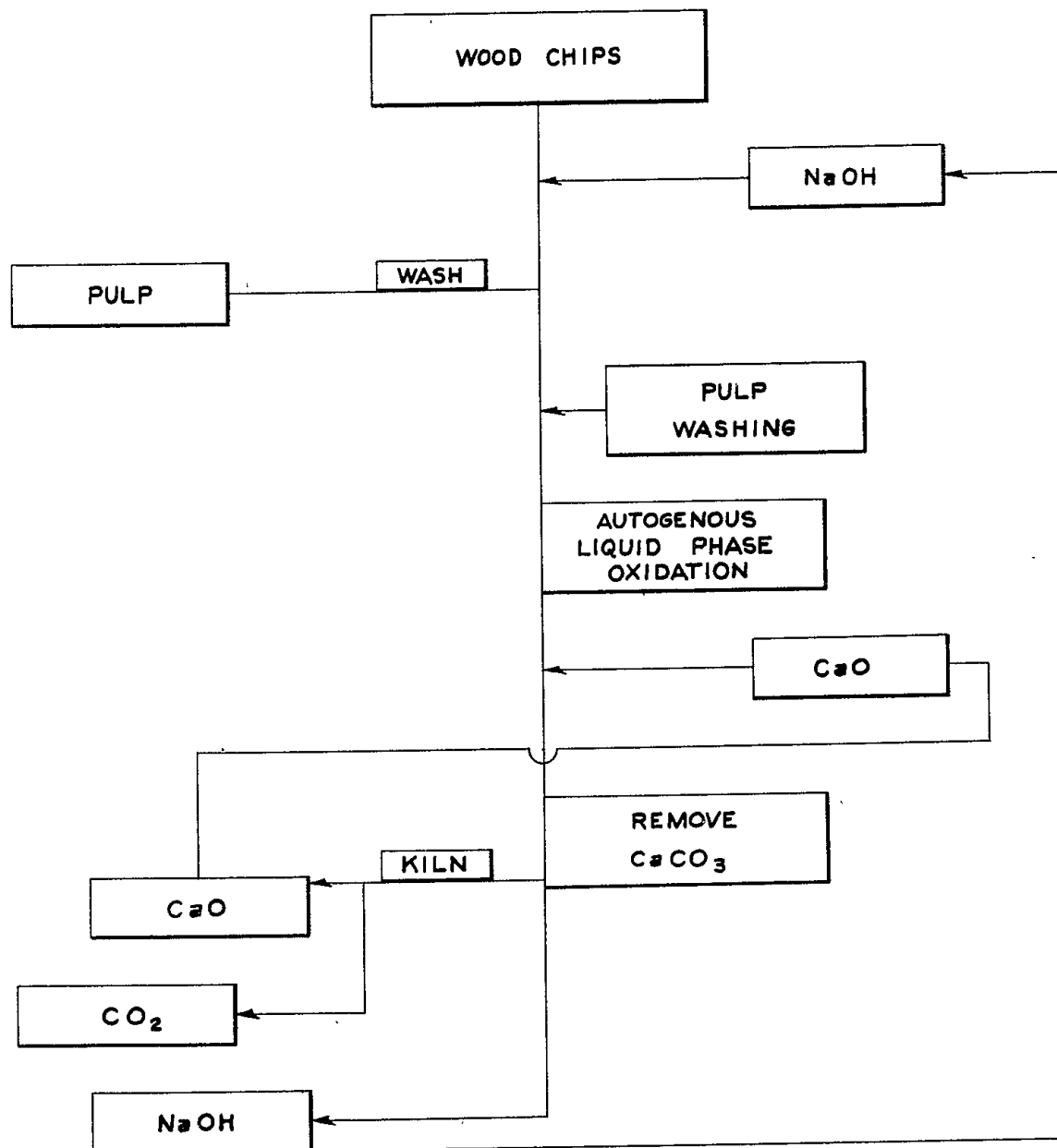
Inventors

CLEMENT JEAN M

Family 8/37 - FAMPAT - ©Questel

Title

(US2774666)

Recovery of cooking liquor from spent soda pulping liquors**Images**

INVENTORS
DANIEL M. BARTON
EUGENE W. SCHOEFFEL
BY
Laurence Vandekerckhove & Miller
ATTORNEYS

Publication data including kind & date

US2774666	A	1956-12-18	US2774666
FR1127661	A	1956-12-21	FR1127661
GB784650	A	1957-10-16	GB-784650
CH338697	A	1959-05-31	CH-338697

**Abstract**

(US2774666)

A cyclic process for the digestion of wood chips, using a soda base cooking liquor, comprises separating the **waste** soda liquor after digestion, and then oxidizing the liquor, at a temperature of at least 150 DEG C. and at a pressure of at least 200 p.s.i., in the presence of at least sufficient oxygen required (theoretically) to convert all the carbon and hydrogen present to carbon dioxide and water respectively. The liquid effluent is then treated, preferably at about 85 DEG C., with sufficient alkaline earth hydroxide to cause **precipitation** of substantially all the carbonates and bicarbonates present, the **precipitate** is **filtered** off to be kilned to form more alkaline earth oxide, and the filtrate of **caustic soda solution** reused in the digestion of more wood chips. Preferred conditions for the autogenous oxidation of the liquor are a temperature of 200-372 DEG C. at a pressure of at least 400 p.s.i. The kilning of the **filtered** calcium carbonate is carried out at above 650 DEG C., and preferably at about 900 DEG C.

(From GB784650 A)

Inventors

BARTON DANIEL M

SCHOEFFEL EUGENE W

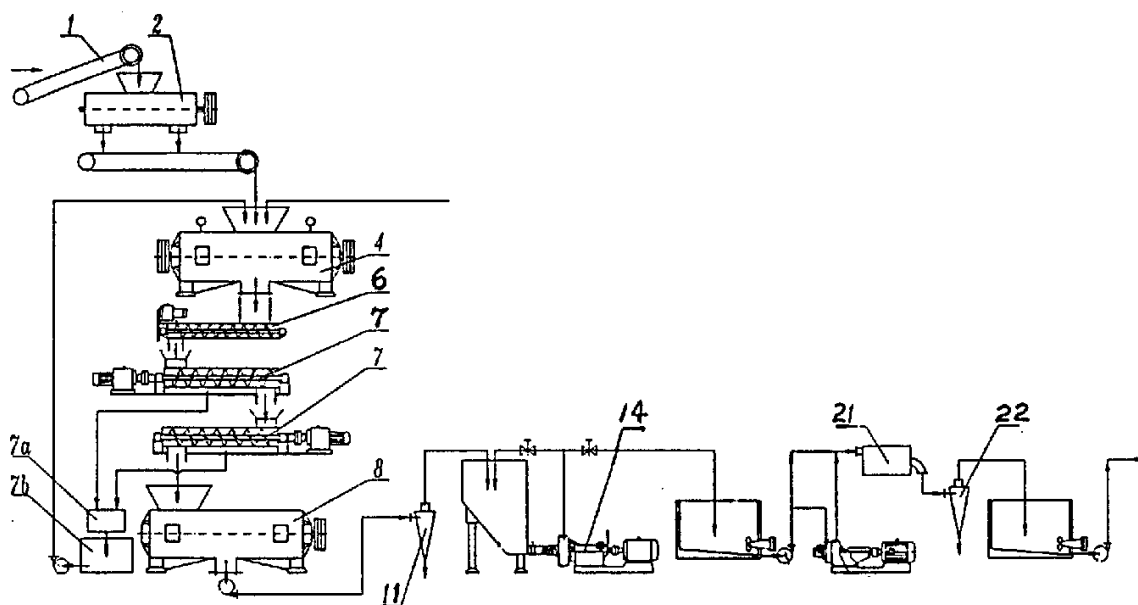
Latest standardized assignees - inventors removed

STERLING DRUG

Family 9/37 - FAMPAT - ©Questel

Title

(CN1228503C)

Technological system for producing environment protection type paper **pulp****Images****Publication data including kind & date**

CN1386927	A	2002-12-25	CN1386927
CN1228503	C	2005-11-23	CN1228503C

**Abstract**

(CN1228503C)

A system for preparing paper **pulp** from different raw materials without discharge of pollutants includes grinding raw material, digestion, concentrating, centrifugal separation of **pulp** from sand, and **filtering** sewage for reuse. Its advantages are no environmental pollution, low cost and high quality of **pulp**.

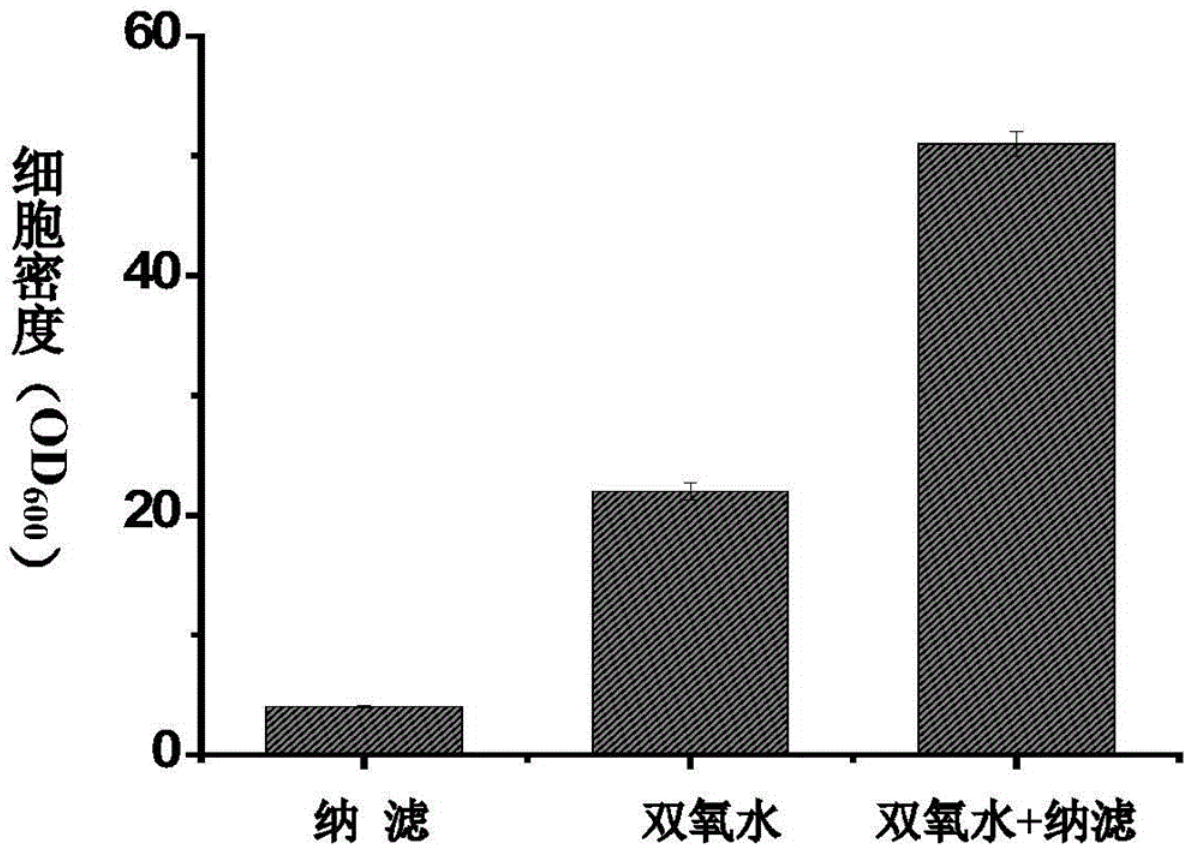
Inventors

LI JUN
LI GANGRONG

Family 10/37 - FAMPAT - ©Questel

Title

(CN105316973)
Preparation process of pulping prehydrolysis liquid based on advanced oxidation-nanofiltration technology
Images



Publication data including kind & date

CN105316973	A	2016-02-10	CN105316973
CN105316973	B	2017-05-17	CN105316973B



Abstract

(CN105316973B)

The invention provides a preparation process of high-fermentability pulping prehydrolysis liquid based on an advanced oxidation method and a nanofiltration membrane **filtering** technology, aiming at solving the problem of detoxifying lignocellulose hydrolysis liquid in the prior art. The preparation process comprises the following steps: (1) preparing the pulping prehydrolysis liquid; (2) concentrating and removing sediment; (3) carrying out advanced oxidation treatment; and (4) carrying out nanofiltration treatment. The preparation process takes the prehydrolysis liquid generated by a production process of chemical mechanical **pulp** and dissolved **pulp** of a pulping papermaking industry as a treatment object; firstly, an advanced oxidation reagent is used for degrading an organic inhibitor molecule; and secondly, **residual** micro-molecular inhibitors in the prehydrolysis liquid are removed by using a nanofiltration membrane **filtering** method. The advanced oxidation and the nanofiltration membrane **filtering** are mutually combined to form a remarkable synergistic effect; and fermentable sugar in the prehydrolysis liquid can be kept and the micro-molecular aromatic inhibitors also can be removed. The lignocellulose hydrolysis liquid prepared by the method can be used as a fermentation carbon source and

used for fermenting to produce single-cell proteins or prepare high-additional-value compounds.

Inventors

SUN ZHIJIE

DU JUAN

ZHANG YANG

CUI QIU

WANG DANDAN

Latest standardized assignees - inventors removed

QINGDAO INSTITUTE OF BIOENERGY & BIOPROCESS TECHNOLOGY CAS

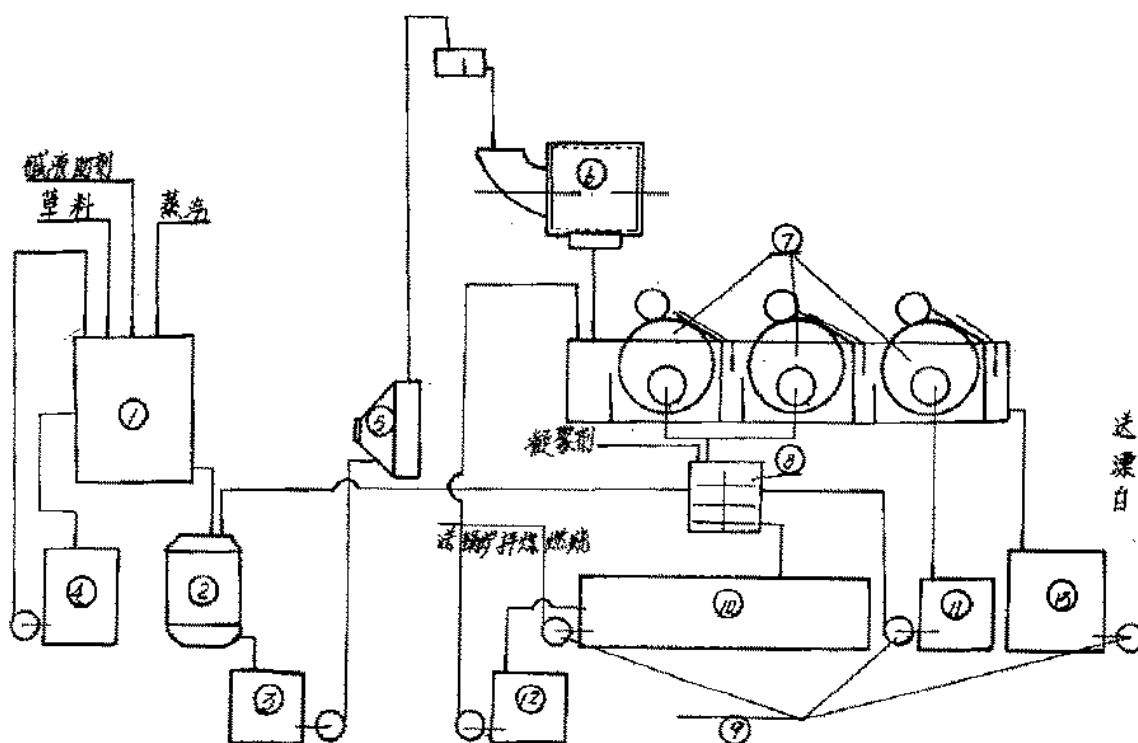
Family 11/37 - FAMPAT - ©Questel

Title

(CN1078648C)

Technology for making **pulp** by forage alkaline process and method for disposing its produced sewage and its system device

Images



Publication data including kind & date

CN1147042	A	1997-04-09	CN1147042
CN1172875	A	1998-02-11	CN1172875
CN1302931	A	2001-07-11	CN1302931
CN1078648	C	2002-01-30	CN1078648C



Abstract

(CN1078648C)

An alkaline digestion pulping process for grass materials technically features that under low-temp ordinary-pressure digestion condition, assistant is additionally used to make **pulp** have low content of ash, good **filter** performance, quick clarification and cyclic use of **waste** liquid. The **waste** liquid generated after pulping and washing **pulp** can be **recovered** and purified by lime powder as agglutinating agent. The good **pulp** after washing can be easily bleached. Said process has the advantages of high technologicla specifications of resulatant **pulp**, low cost, high operativity and basically eliminating environmental pollution. Its finished **pulp** can be used to make high-grade paper.

Inventors

LI WENHAI

Family 12/37 - FAMPAT - ©Questel

Title

(CN101666051)

Method for producing sodium humate and by-product paper pulp by using cassava dregs as raw materials

Publication data including kind & date

CN101666051

A

2010-03-10

CN101666051

**Abstract**

(CN101666051)

The invention provides a method for producing sodium humate and by-product paper pulp by using cassava dregs as raw materials, comprising the following steps: adding aqueous solution of sodium hydroxide to the cassava dregs from which starch is extracted, filter-pressing after heating and taking out fibers; washing the fibers with water and then obtaining coarse paper pulp; adding dilute sulphuric acid to the solution after filter-pressing the fibers to separate out solid phase which is humic acid (HA) and liquid phase; adding lime to the solution after separating the solid, sedimenting and obtaining the solid calcium sulphate; adding part of the liquid phase which is sodium hydroxide used for separating the calcium sulphate to the HA to obtain the sodium humate; and allowing the rest liquid to return to the alkali boiling process or be used as circulating water for soaking cassava dregs, wherein, after being refined, the HA is used as the ceramic additive, the dispersator, the drilling mud regulator, the industrial water stabilizer and other industrial raw materials, is used as the compound fertilizer in agriculture, is used as the feed additive in poultry and livestock culture and is used as the synergist in aquaculture. The method of the invention can fully utilize the cassava dregs to obtain the sodium humate, paper pulp and calcium sulphate products, not only can avoid secondary pollution but also has better economic benefits.

Inventors

LU SHANLIN

Latest standardized assignees - inventors removed

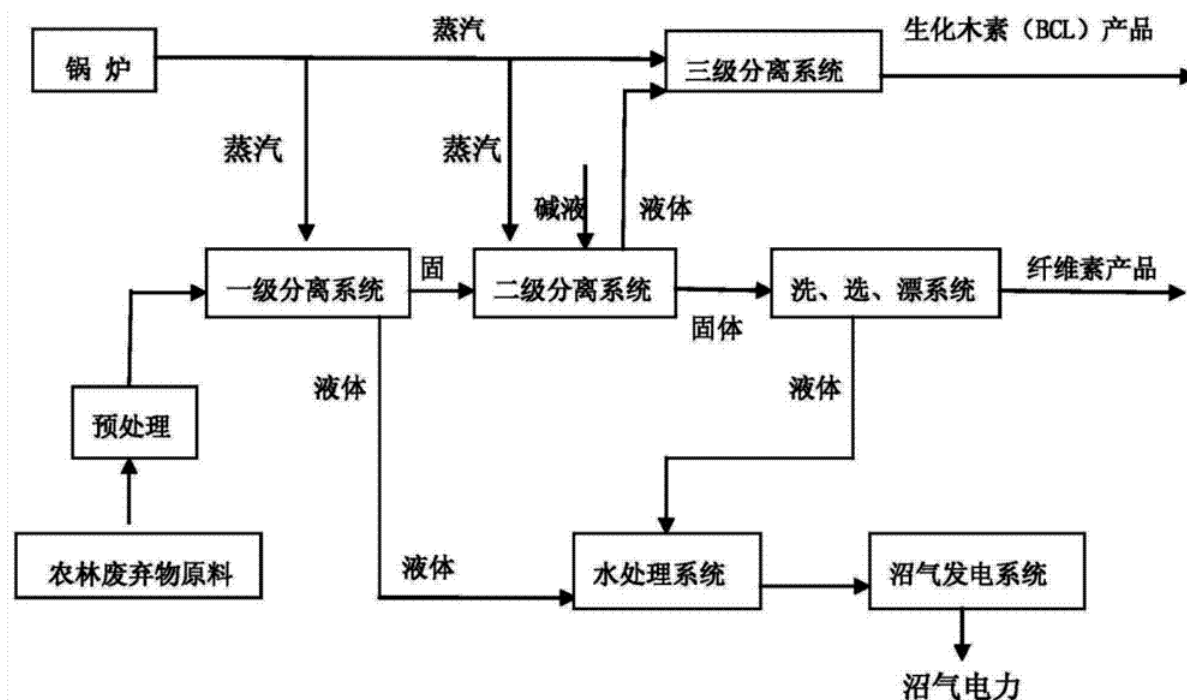
GUANGXI BEIGUO BIO SCIENTIFIC

Family 13/37 - FAMPAT - ©Questel

Title

(CN105672012)

Method for simultaneously extracting hemicellulose, cellulose and lignin from biomass material

Images

Publication data including kind & date

CN105672012	A	2016-06-15	CN105672012
CN105672012	B	2018-11-06	CN105672012B



Abstract

(CN105672012B)

The invention provides a method for simultaneously extracting hemicellulose, **cellulose** and lignin from a biomass material. The method comprises steps as follows: first-level separation, second-level separation, third-level separation, membrane treatment of a third liquid phase and pH regulation. With the adoption of the method, a lignin membrane treatment supernatant with the pH value in a range from 10 to 13 is adopted to replace or partially replace alkaline liquor to regulate pH of an IC anaerobic tower to the required range; the separate treatment cost of the supernatant can be reduced, the problem of the potential pollution hazard of the supernatant to the environment is effectively solved, a tedious purchasing process is reduced, and the safety hazard caused by loading and unloading of liquid **caustic** soda is eliminated.

Inventors

ZOU HAI PING
LIU ZHIGANG
ZOU YAN
HUANG YI
MEI HU
ZHOU WANYING

Latest standardized assignees - inventors removed

CITIC GEYI CIRCULAR ECONOMY

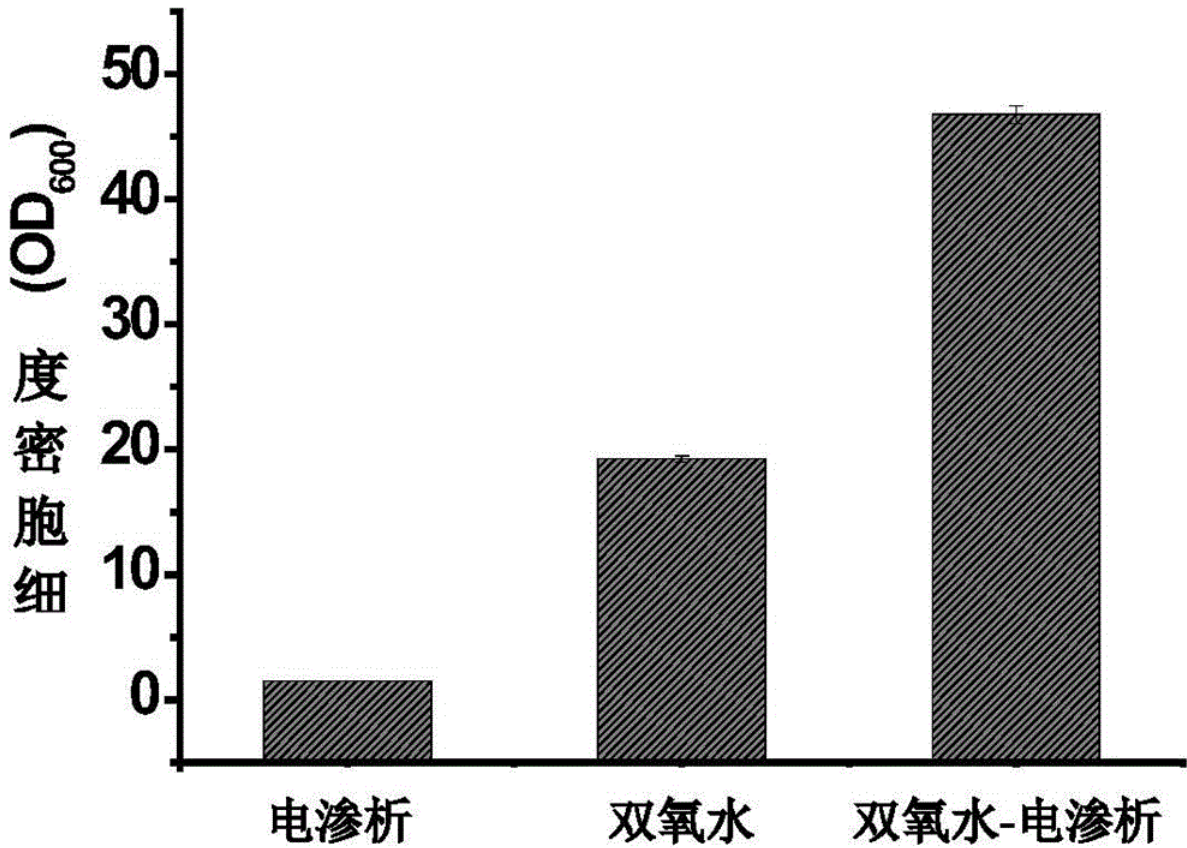
Family 14/37 - FAMPAT - ©Questel

Title

(CN105350369)

Preparation process of lignocellulose pulping pre-hydrolysis liquid having efficient fermentation capability

Images



CN105350369

A 2016-02-24 CN105350369

CN105350369

B 2017-06-06 CN105350369B

**Abstract**

(CN105350369B)

The invention provides a preparation process of lignocellulose pulping pre-hydrolysis liquid having efficient fermentation capability based on an advanced oxidation process and electrodialysis treatment against the problems of lignocellulose hydrolysis liquid detoxification in the prior art. The preparation process comprises the following steps: 1, preparing pulping pre-hydrolysis liquid; 2, conducting concentration, and removing sediment; 3, conducting advanced oxidation treatment; 4, conducting electrodialysis treatment. According to the preparation process, the pre-hydrolysis liquid generated in the production processes of chemimechanical **pulp** and dissolving **pulp** in the pulping and papermaking industry serves as the treatment object, firstly, organic inhibitor molecules are degraded through advanced oxidized reagent, subsequently, electrolyte inhibitor in the hydrolysis liquid is removed through an electrodialysis method, and the advanced oxidized reagent and the electrodialysis method achieve a remarkable synergistic effect. The pre-hydrolysis liquid prepared through the preparation method can serve as a fermentation carbon source and be used for fermenting and producing unicellular protein or preparing high value-added compounds. By means of a detoxification method of the preparation process, under the circumstance that fermentable sugar cannot be lost, small-molecule inhibitor such as phenols can be removed, and ionogenic inhibitor can be removed.

Inventors

SUN ZHIJIE

DU JUAN

ZHANG YANG

CUI QIU

WANG DANDAN

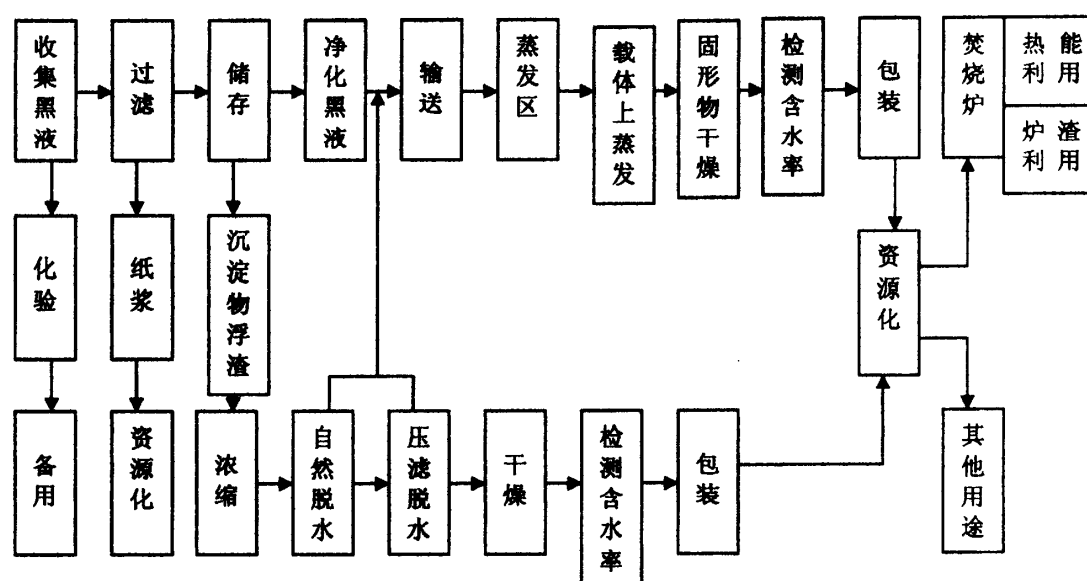
Latest standardized assignees - inventors removed

QINGDAO INSTITUTE OF BIOENERGY & BIOPROCESS TECHNOLOGY CAS

Family 15/37 - FAMPAT - ©Questel

Title

(CN1277986C)

Zero discharge technique for treating **waste** fluid from paper mill by using subtraction method**Images**

concentration, black liquor gasification, alkali fusant dissolution, green liquor causticization, gasified gas desulfurization, and sulfuric acid preparation. Dilute black liquor produced by boiling is divided into two parts; 30-50 wt% of the dilute black liquor is subjected to lignin extraction; part of the acidic filtrate generated from lignin extraction separation is used for acidification of the dilute black liquor, and the other part is subjected to alkalization, and used as a cooking liquor; 50-70 wt% of the dilute black liquor is conveyed into an evaporator for concentration to obtain 60-75% **strong** thick black liquor, which is sprayed into a gasification furnace for gasification, so as to obtain alkali liquor containing sodium hydroxide and sodium sulfide, and sulfuric acid. The method provided by the invention can **recycle** lignin (extraction rate of 30-50%) and alkaline substances (**recycling** rate of 80-90%) from the black liquor, produce synthesis gas and sulfuric acid for **recycling** within the system, and save energy by 5-10%.

Inventors

NONG GUANGZAI

LU BINGCHEN

LI SHIQIANG

Latest standardized assignees - inventors removed

GUANGXI UNIVERSITY

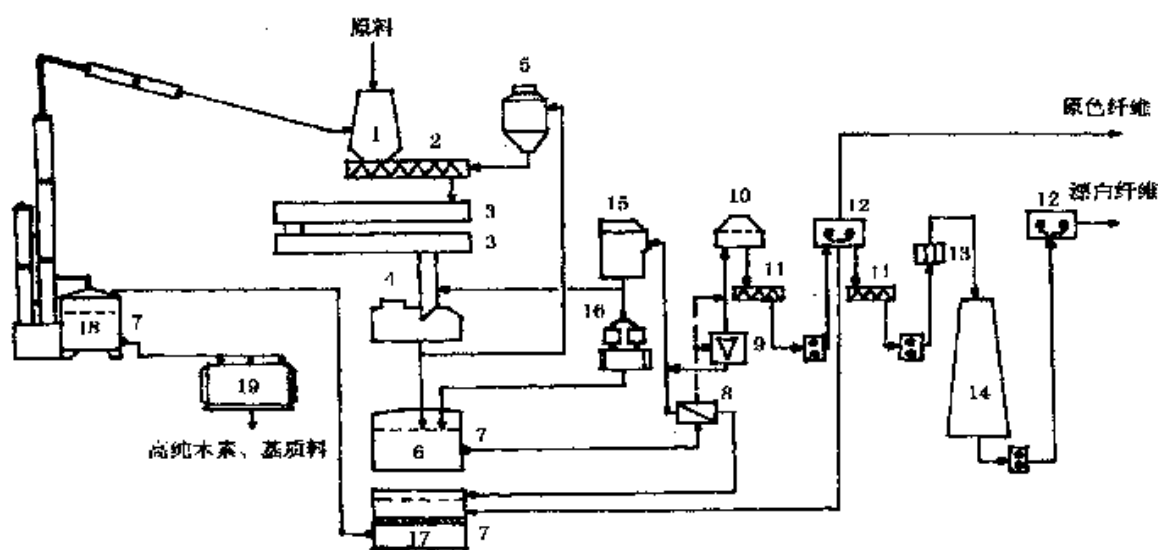
Family 17/37 - FAMPAT - ©Questel

Title

(CN1619055)

Highly pure lignin, high efficiency fiber separating equipment system

Images



Publication data including kind & date

CN1619055

A 2005-05-25 CN1619055



Abstract

(CN1619055)

The present invention relates to a high-pure lignin and fibre high-effective separation equipment system. It includes raw material organic solvent preheating-digesting work-shop section, thermally-grinding decomposition work-shop section, fine **pulp** concentration work-shop section to obtain gray fibre, fine **pulp** bleaching work-shop section to obtain the bleached fibre, organic solvent **recovering** and separating work-shop section, after the high-pure lignin is separated out, said organic solvent can be reused, the **residual waste** liquor (dregs) can be dried, and can be used as matrix of composite fertilizer or fuel.

Inventors

LUO XUEGANG

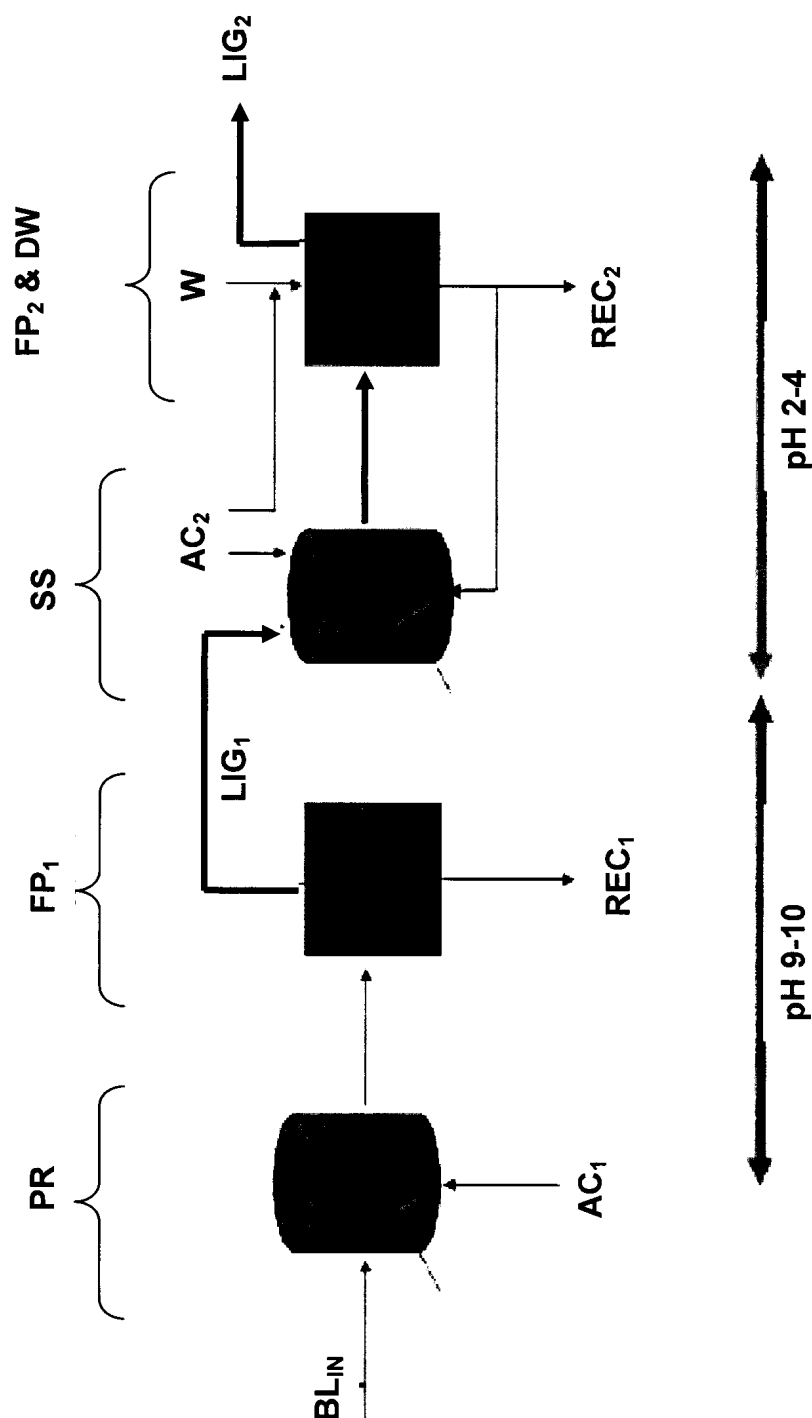
XU DONG

Family 18/37 - FAMPAT - ©Questel

Title

(EP2948590)

Method for producing high purity lignin

Images**Fig. 1**
*Prior Art***Publication data including kind & date**[CA2898449](#)

A1 2014-07-31

CA2898449

[WO2014116150](#)

A1 2014-07-31

WO2014116150

[US20150322104](#)

A1 2015-11-12

US20150322104



[EP2948590](#)

A1 2015-12-02 EP2948590

[EP2948590](#)

A4 2016-08-17 EP2948590

Abstract

(EP2948590)

The present invention relates to a method for separation of lignin from original black liquor (BLIN) comprising a first **precipitation** stage (PR) for **precipitation** of lignin by a first acidification using acidifier AC, preferably using CO₂, at alkaline conditions, then separating a lignin cake with subsequent suspension of the lignin cake in a **strong** acid in order to leach our metals from the lignin followed by dewatering and obtaining a clean lignin product LP. According to the invention is the process further improved by intensified hydrolysis of lignin cake such that most of the carbohydrates are broken down to dissolvable monomers that could be separated from the lignin in the filtrate from a **filtering** stage subsequent to the hydrolysis. The improved hydrolysis could reduce as much as 90% of the carbohydrate content using a moderately increased temperature and increased charge of acidifier while avoiding any larger lignin yield losses.

Inventors

TIKKA PANU

Latest standardized assignees - inventors removed

VALMET

Family 19/37 - FAMPAT - ©Questel

Title

(CN101424056)

Atmospheric pre-treatment method of plant fiber material

Publication data including kind & date[CN101424056](#)

A 2009-05-06 CN101424056

**Abstract**

(CN101424056)

The invention discloses a normal pressure pre-treatment method for a plant fibrous material. Under normal pressure conditions, the plant fibrous material is cooked by dilute sulfuric acid first to hydrolyze hemicellulose into a pentaose solution; then a remaining part is cooked by dilute alkali solution to separate out most of lignin to obtain single fibriform **cellulose**; and the sulfuric acid and the alkali solution are **recovered** for circulating use. The single fibriform **cellulose** has a loose structure due to the fact that no hemicellulose is contained and only a small amount of lignin is contained, which can ensure that the rate of concentrated acid hydrolysis or enzyme hydrolysis of the **cellulose** is greatly accelerated. The pretreatment is finished under normal pressure, so the huge investment for a pressure vessel during high-temperature pretreatment is saved; the cooking temperature is basically lower than 100 DEG C, and the cheap heat energy obtained by the light-heat conversion of solar energy can be utilized as the heat energy for heating, so the using amount of coal is reduced; and process reagents, namely the sulfuric acid and sodium hydroxide can be **recycled**, so the method is a method which has less investment and is environment-friendly.

Inventors

CHEN PEIHAO

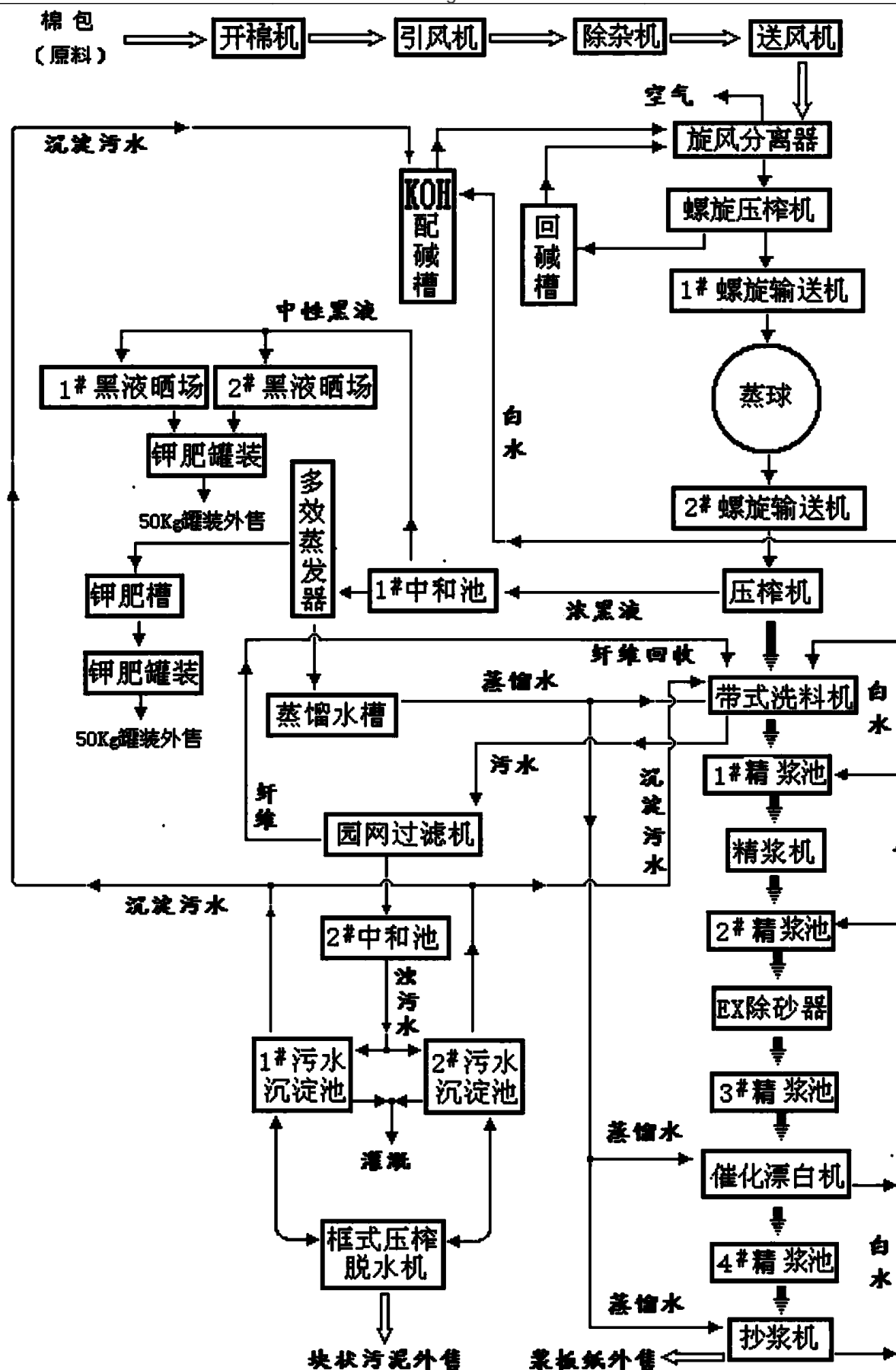
Family 20/37 - FAMPAT - ©Questel

Title

(CN203700850U)

Cotton linter KOH stewing and pulping system

Images



Publication data including kind & date

CN203700850

U 2014-07-09

CN203700850U



Abstract

(CN203700850U)

The utility model discloses a cotton linter KOH stewing and pulping system which comprises a cotton splitter, an induced draft fan, an impurity removing machine, an air supplying machine, a cyclone separator, a screw press, a first screw

conveyor, a spherical boiler, a second screw conveyor, an alkali returning slot and a KOH alkali dosing slot, as well as a squeezer, a multi-effect evaporator, a belt-type material cleaning machine, a first finely-pulping tank, a finely-pulping machine, a second finely-pulping tank, an EX desander, a third finely-pulping tank, a catalyzing and bleaching machine, a fourth finely-pulping tank, a **pulp** machine, a rotary screen **filter**, a second neutralization tank, a first sewage settling tank, a second sewage settling tank, and a frame type press dehydrator. According to the utility model, the cotton linter KOH stewing and pulping is carried out by adopting KOH instead of the traditional NaOH, and black liquor generated after stewing is converted into an organic fertilizer containing potassium after being subjected to acid neutralization, so that harmful substances are converted into beneficial substances, and wastes are transformed into treasures; black liquor is converted into the organic fertilizer containing potassium to be reused in a farmland, so that the yield and income are increased.

Inventors

XUE RUNLIN

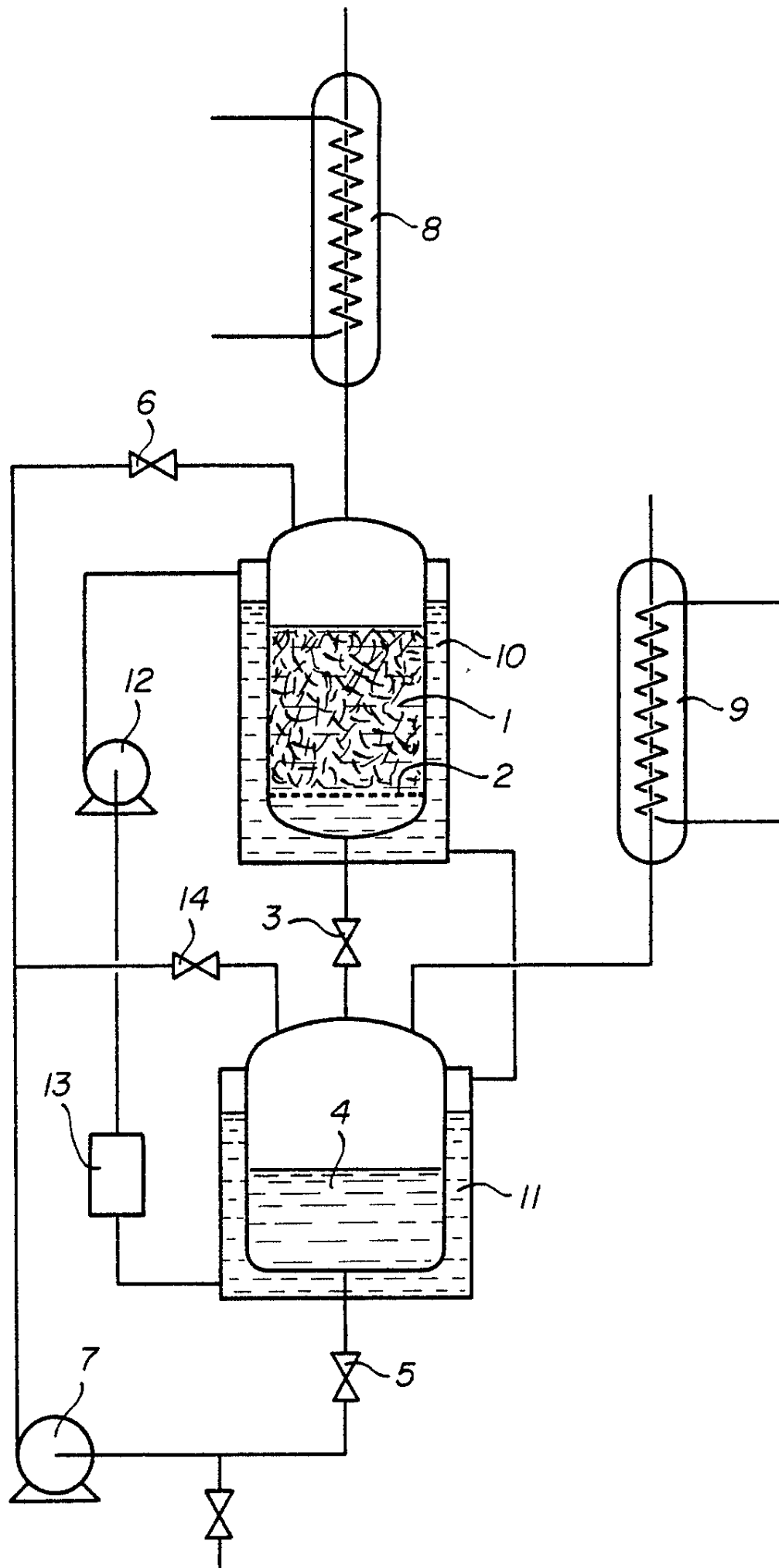
Family 21/37 - FAMPAT - ©Questel

Title

(EP--43342)

A method for the delignification of wood and other ligno-cellulosic products

Images



Publication data including kind & date

FI811894	L	1981-12-21	FI8101894
EP0043342	A1	1982-01-06	EP--43342
BR8103885	A	1982-03-09	BR8103885
ZW14381	A1	1982-03-24	ZW8100143
JPS5751889	A	1982-03-26	JP57051889
ZA8104137	B	1982-11-24	ZA8104137
OA6842	A	1983-02-28	OA---6842
EP0043342	B1	1983-12-07	EP--43342
AT5541	T	1983-12-15	ATE005541
DE3161585	D1	1984-01-12	DE3161585
CA1167204	A	1984-05-15	CA1167204
US4511433	A	1985-04-16	US4511433
FI69131	B	1985-08-30	FI--69131
FI69131	C	1985-12-10	FI--69131

**Abstract**

(EP--43342)

A method for delignifying ligno-cellulosic materials and efficiently separate from each other the constituents thereof. Said materials are boiled in an aqueous acid medium in the presence of phenol compounds. After isolating the purified **cellulose** by **filtration**, the liquid phase separates into two layers: an aqueous layer rich with pentoses and an organic layer rich with phenols and lignin, the latter providing, by distillation and pyrolysis of the **residue**, a quantity of phenols at least equal to that of the phenols used in the delignification stage.

Inventors

SACHETTO, JEAN-PIERRE

ARMANET, JEAN-MICHEL

TOURNIER, HERVE

MICHEL, JEAN-PIERRE

JOHANSSON ALLAN AKE

ROMAN, ALAIN

Latest standardized assignees - inventors removed

BATTELLE MEMORIAL INSTITUTE

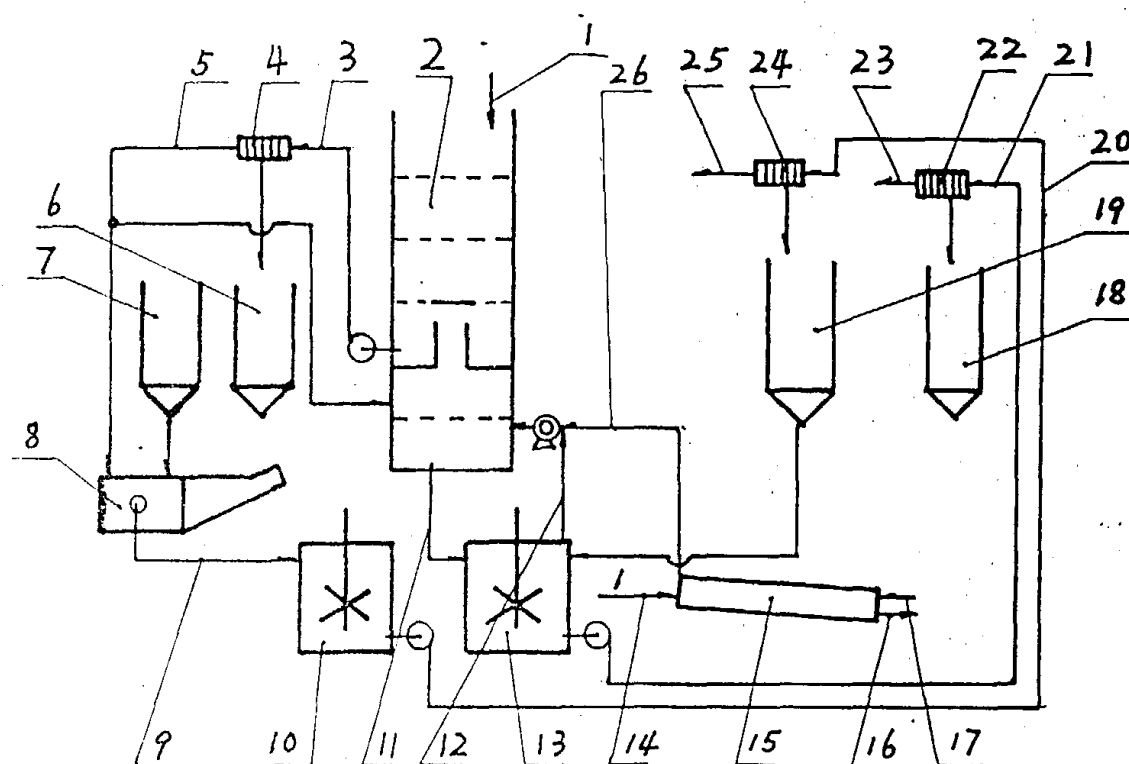
Family 22/37 - FAMPAT - ©Questel

Title

(CN1141983)

Method for comprehensive control and treatment of black liquor from alkali paper-making

Images



Publication data including kind & date

CN1141983

A 1997-02-05 CN1141983



Abstract

(CN1141983)

A method for comprehensive treatment of black liquid from alkali paper-making includes three steps of neutralizing regenerated lye by using SO₂ acid evolved lignin and CaO, incinerating decomposing waste residue to generate SO₂, and producing cement. Said treatment process has the advantage of energy-saving, thorough regeneration and utilization of alkali liquid, without secondary pollution, low equipment investment. For ten-thousand tons pulp production ability, 2000-26000 tons of lignin, 1500-220 tons of liquid alkali and 6000-9000 tons of clinker can be jointly produced, synchronously the sand, limestone residue and mud from water treatment and coal cinder can be comprehensively controlled.

Inventors

LI BAOMIN

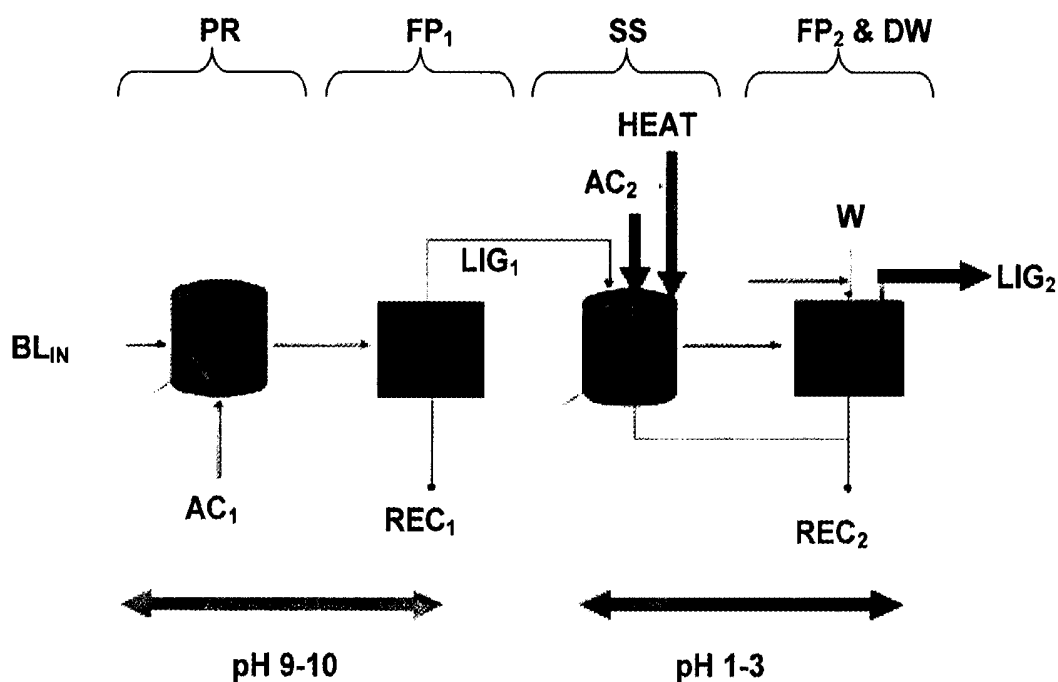
Family 23/37 - FAMPAT - ©Questel

Title

(US10072037)

Method for producing high purity lignin

Images



Publication data including kind & date

[US20170355723](#)

A1 2017-12-14

US20170355723

[US10072037](#)

B2 2018-09-11

US10072037



Abstract

(US10072037)

The method is for separation of lignin from original black liquor (BLIN) that has a first **precipitation** stage (PR) for **precipitation** of lignin by a first acidification using acidifier AC1, preferably using CO₂, at alkaline conditions, then separating a lignin cake with subsequent suspension of the lignin cake in a **strong** acid in order to leach out metals from the lignin followed by dewatering and obtaining a clean lignin product LP. The process further is improved by intensified hydrolysis of lignin cake such that most of the carbohydrates are broken down to dissolvable monomers that could be separated from the lignin in the filtrate from a **filtering** stage subsequent to the hydrolysis. The improved hydrolysis could reduce as much as 90% of the carbohydrate content using a moderately increased temperature and increased charge of acidifier while avoiding any larger lignin yield losses.

Inventors

TIKKA PANU

Latest standardized assignees - inventors removed

VALMET

Family 24/37 - FAMPAT - ©Questel

Title

(CN103306154)

Treatment and utilization method of pulping black liquor

Publication data including kind & date

[CN103306154](#)

A 2013-09-18

CN103306154



Abstract

(CN103306154)

The invention relates to a treatment and utilization method of pulping black liquor and particularly belongs to the field of alkaline pulping, extraction of **cellulose** and hemicellulose **pulp** and retting. The black liquor can form a large number of

foams by utilizing a foam promoter when is inflated or vigorously stirred, and the foams are removed to remove organic substances which are dissolved or suspend in the black liquor, especially the organic substances with surface activity. Additionally, by utilizing the foaming property and the surface activity of the black liquor added with the foam promoter, the black liquor can be applied to the fields of foamed cement manufacturing, fire fighting, dust removal, flotation, oil exploitation and the like.

Inventors

QIN CAIDONG

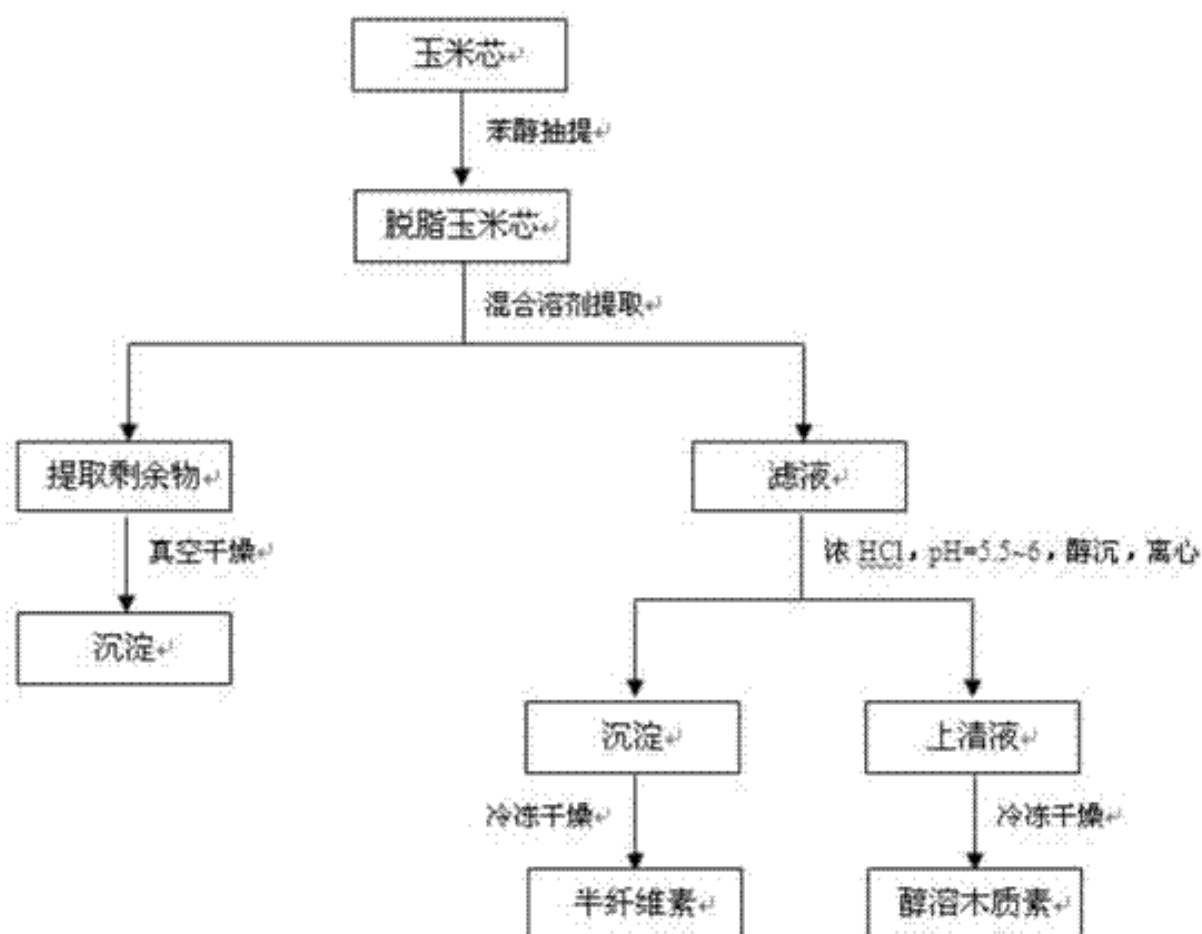
Family 25/37 - FAMPAT - ©Questel

Title

(CN107574701)

Method for extracting high-purity hemicelluloses from corncobs

Images



Publication data including kind & date

CN107574701

A 2018-01-12 CN107574701



Abstract

(CN107574701)

The invention discloses a method for extracting high-purity hemicelluloses from corncobs. The method comprises the following steps: crushing the corncobs, sieving by virtue of a 60-mesh sieve, and extracting by virtue of a benzene-alcohol solution to remove lipid-soluble pigments; adding a mixed solvent, putting a reaction container into a constant-temperature heating type magnetic stirring device at 60-90 DEG C, starting a magnetic stirring and condensing device, and reacting for 2-6 hours; and after the reaction is finished, rapidly cooling, carrying out reduced pressure suction **filtration**, concentrating filtrate by virtue of a rotary evaporator, regulating the pH value to be 5.5-6, adding ethanol, carrying out centrifugation and freeze drying so as to finally obtain hemicelluloses, wherein the purity of the hemicelluloses reaches up to 96.7%. The method is scientific and reasonable, required equipment is simple, xylogen in the corncobs is effectively removed, a large number of high-purity hemicelluloses products are successfully extracted, the quality of the hemicelluloses of the corncobs

is remarkably improved, the efficient treatment of the corncobs is realized, and the economic and social benefits are remarkable.

Inventors

WEI MIN

FAN HONGYU

ZHAO JIAN

Latest standardized assignees - inventors removed

INSTITUTE OF CHEMICAL INDUSTRY OF FOREST PRODUCTS CHINESE ACADEMY OF FORESTRY

Family 26/37 - FAMPAT - ©Questel

Title

(EP2773725)

Method for removal of toxic waste from timber

Images

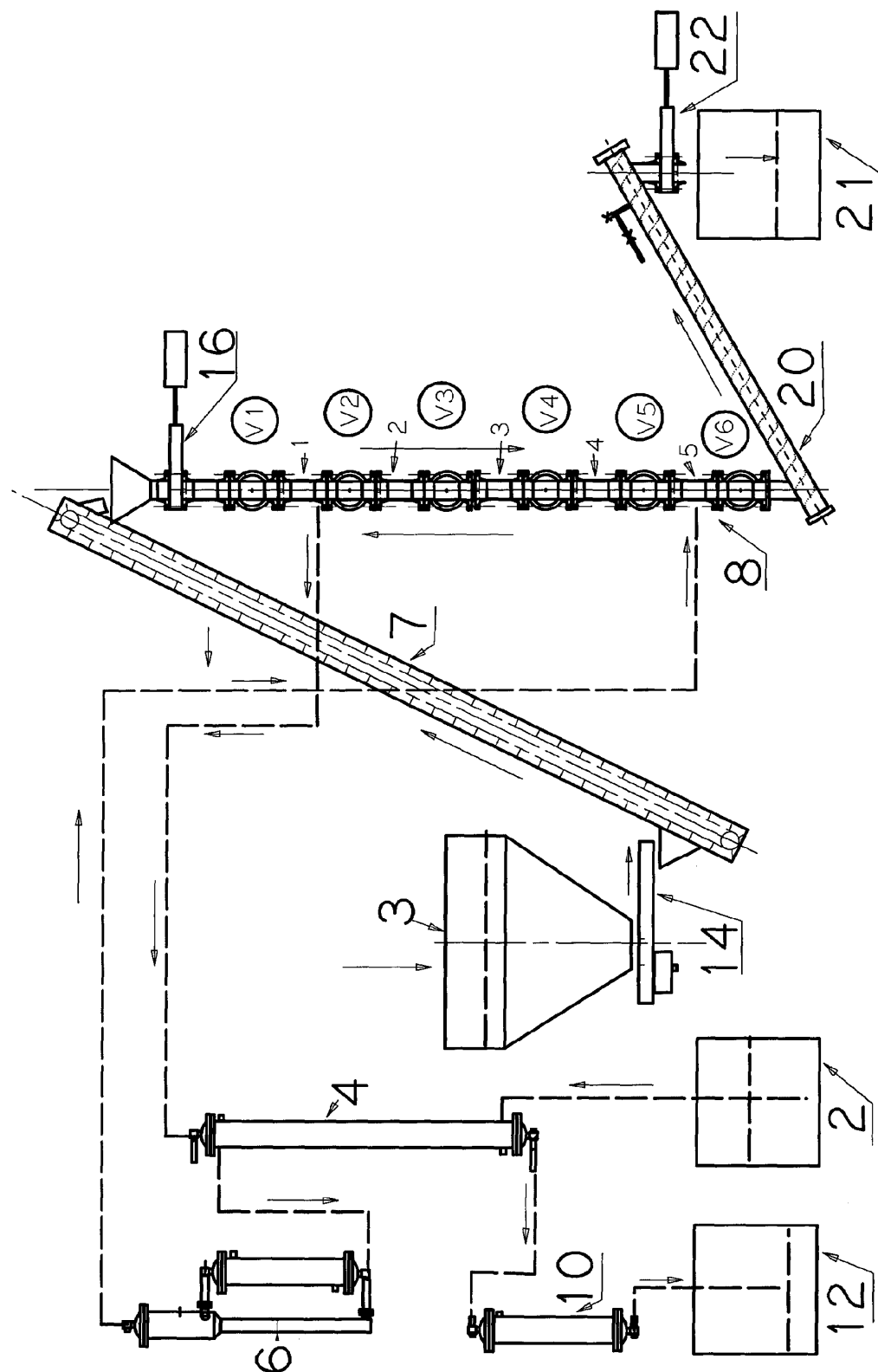


Fig 1

Publication data including kind & date

WO2013066196	A1	2013-05-10	WO201366196
AU2012331717	A1	2014-06-05	AU2012331717
EP2773725	A1	2014-09-10	EP2773725
US20140311201	A1	2014-10-23	US20140311201
CN104136579	A	2014-11-05	CN104136579
IN1021MUN2014	A	2015-05-22	IN2014MN01021
EP2773725	A4	2015-07-08	EP2773725
NZ625165	A	2016-08-26	NZ-625165



Abstract

(EP2773725)

A continuous flow wood processing technology for extracting lignin from woody plant material and converting the delignified cellulosic **residue** to crude bio-oils is provided. Wood is chipped before processing starts and fed into a lignin extractor. The lignin extractor uses ethanol at high temperatures to dissolve the lignin with counter current material contactors and heat exchangers and a computer control system to control the operation. Most of the preservative chemicals are likely to **precipitate** out at this stage as a heavy sludge which can be removed from the process. The ethanol containing dissolved lignin is removed from the lignin extractor, the dissolved lignin **recovered**, the ethanol being **recycled** into the lignin extractor and the **residual** heat returned to the process. The delignified cellulosic **pulp** is removed from the lignin extractor and subjected to a milling operation to convert the **pulp** into a smooth sludge for entry to a bio-converter by a super critical water process. The **residue** is prepared as a high phosphate Fertilizer. Also described is a process for the removal of toxic preservative chemicals from **waste** timber and conversion to useful or nontoxic forms.

Inventors

BATHURST CHRISTOPHER FRANCIS

Latest standardized assignees - inventors removed

SOLRAY HOLDINGS

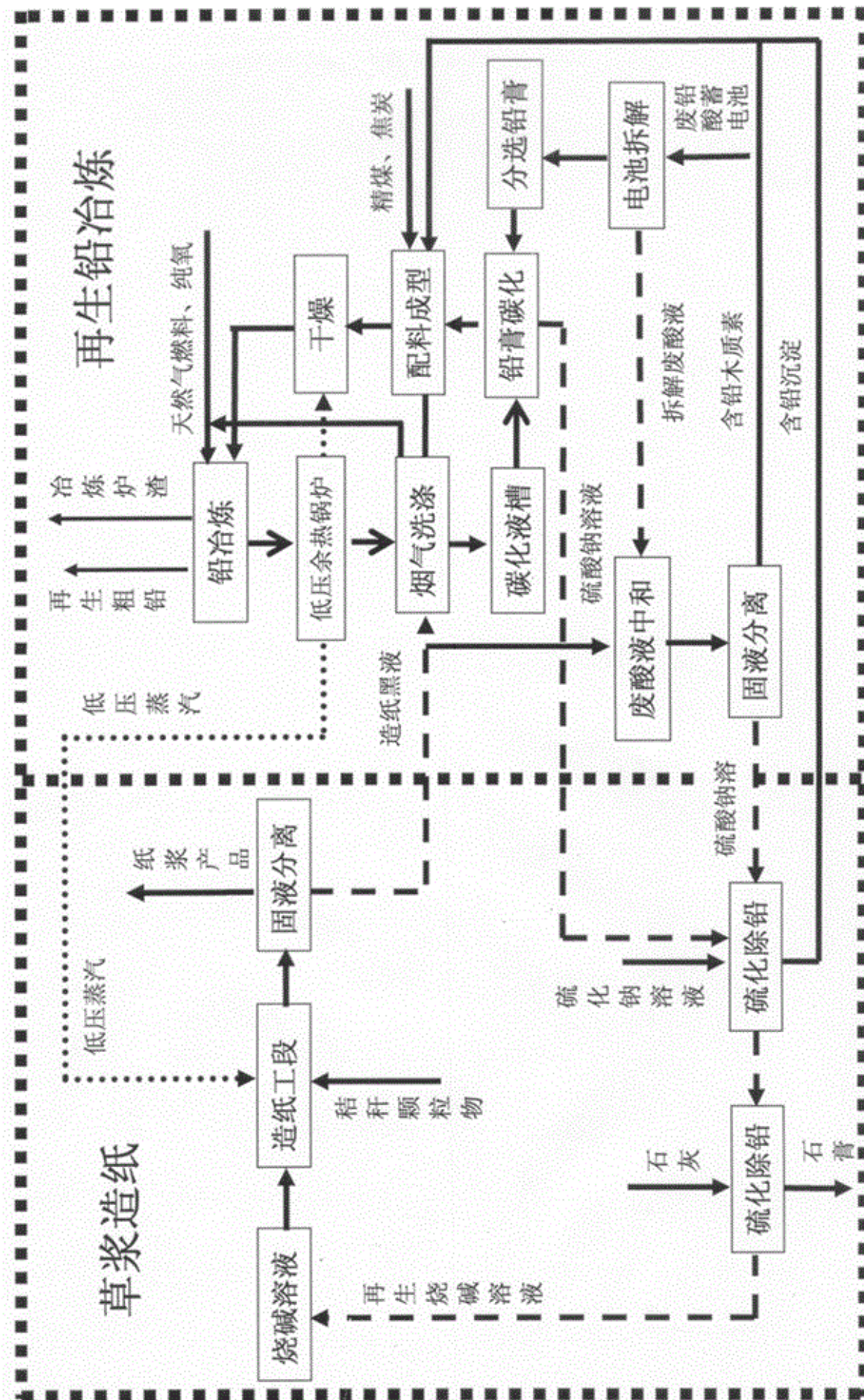
Family 27/37 - FAMPAT - ©Questel

Title

(CN104498716)

Energy-conserving and environment-protecting regenerated lead smelting and paper **pulp** cogeneration technology

Images



CN104498716B

Abstract

(CN104498716B)

The invention discloses an energy-conserving and environment-protecting regenerated lead smelting and paper pulp cogeneration technology. The energy-conserving and environment-protecting regenerated lead smelting and paper pulp cogeneration technology is characterized by comprising the following steps: recovering flue gas waste heat of a crude lead smelting furnace as a heat source for producing paper pulp; washing a lead smelting flue gas with a strong alkaline paper-making black liquor, and absorbing CO₂ and a trace of SO₂ in the flue gas, thus obtaining a sodium carbonate solution, carbonizing a lead plaster; neutralizing and disassembling a waste acid generated by a waste battery by using the paper-making black liquor; washing the flue gas with the black liquor, neutralizing the waste sulfur acid, and then merging the obtained sodium sulphate solution; and causticizing with lime, returning the obtained NaOH solution to a paper-making section. According to the technology disclosed by the invention, lead smelting and closed cycle of pulp production wastewater and the flue gas are achieved; the flue gas waste heat of the regenerated lead smelting furnace is utilized; the alkalinity of paper-making pulping and an acid waste liquid of the regenerated lead are mutually neutralized; and the technical problem of waste liquid treatment of the regenerated lead smelting industry and the paper-making production industry is solved by using waste to treat waste.

Inventors

CHEN TIANHU

LIU HAIBO

XIE QIAOQIN

ZHU CHENGZHU

Latest standardized assignees - inventors removed

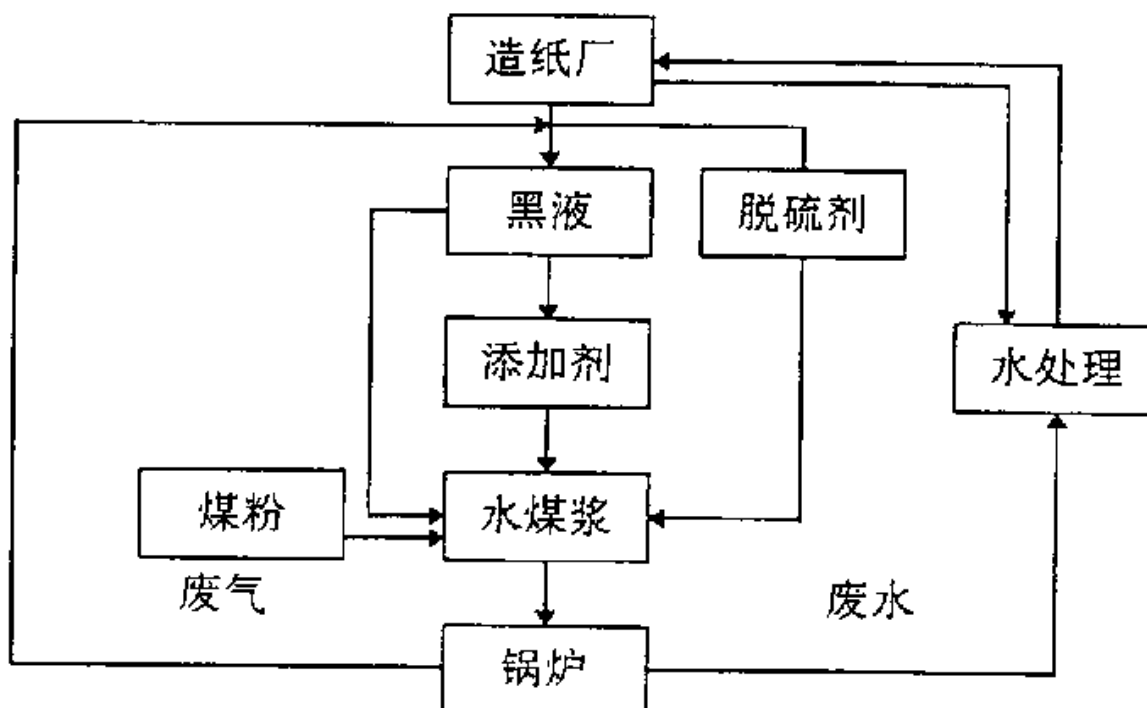
HEFEI UNIVERSITY OF TECHNOLOGY

Family 28/37 - FAMPAT - ©Questel

Title

(CN1114009C)

Method for closed circulation treating waste water, waste gas in papermaking plant

Images**Publication data including kind & date**

CN1210093

A 1999-03-10

CN1210093

CN1114009

C 2003-07-09

CN1114009C



Abstract

(CN1114009C)

A closed-loop technology for treating waste water and gas from paper mill is based on the research about the interaction between paper-making black liquid and desulfurization of fuel coal to prepare desulfurized high-quality water-coal slurry. Its advantages are saving energy, reducing consumption, improving environment and utilization of waste.

Inventors

ZHAO DESHAN

SHU XINQIAN

ZHANG YONGZHEN

FAN YU

LIU WENJIAN

LIU LIJIE

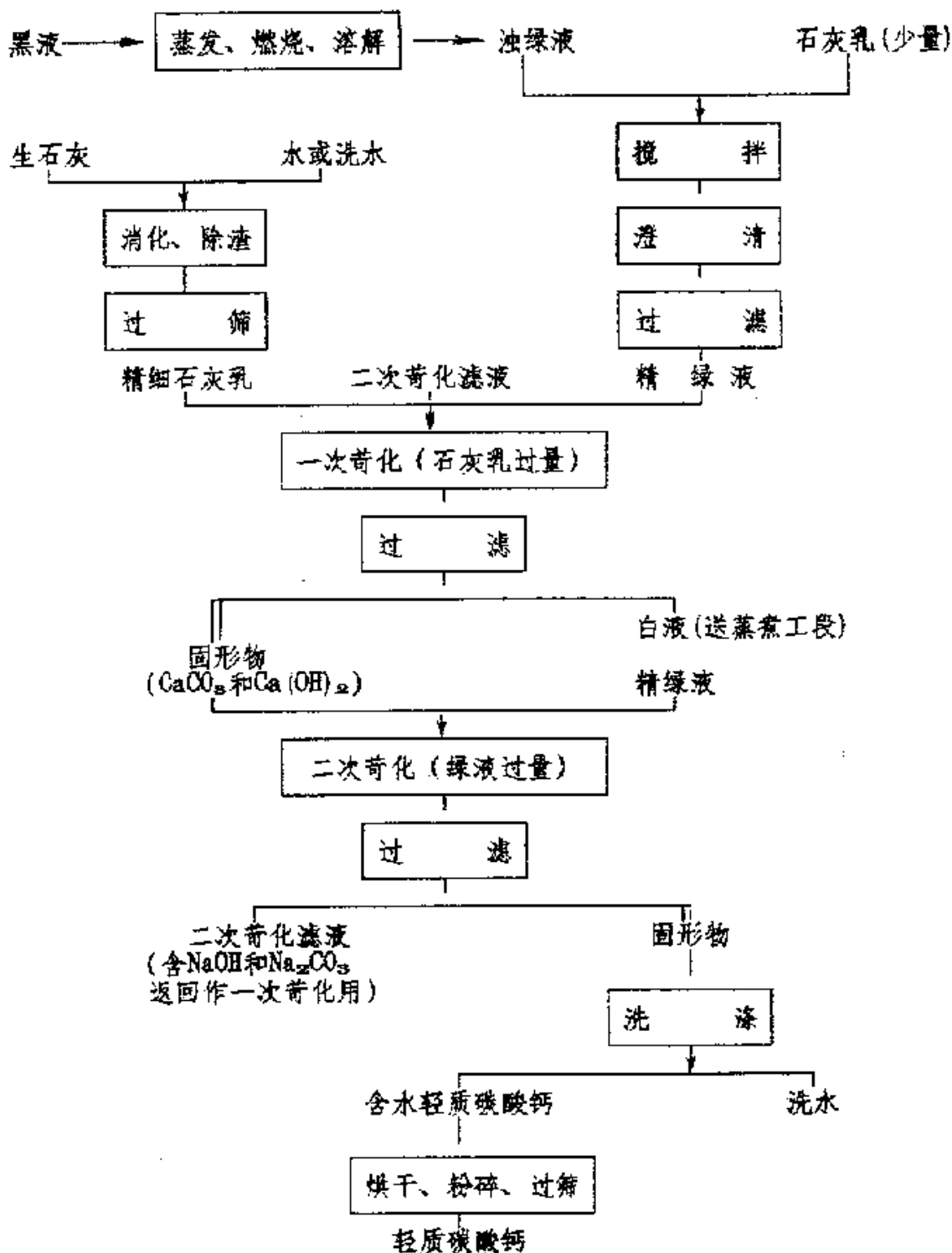
Family 29/37 - FAMPAT - ©Questel

Title

(CN1084413C)

Process for causticizing green solution of alkali recovered from black liquid of paper-making

Images



Publication data including kind & date

CN1239166

A

1999-12-22

CN1239166

CN1084413

C

2002-05-08

CN1084413C



Abstract

(CN1084413C)

A process for treating black paper-making liquid features that before causticizing reaction, the black paper-making liquid is pretreated respectively with green liquid and calcium lime to remove impurities and then it goes through causticizing twice, **filtering** and washing to obtain **caustic** soda (white liquid) and light calcium carbonate without generation of **waste** dregs (white mud). Its advantages include no need of step to treat white mud, less investment in apparatus, and low energy consumption.

Inventors

DONG XUEZHI

AI TIANZHAO

ZHAO HAILAN

Latest standardized assignees - inventors removed

AI TIANZHAO

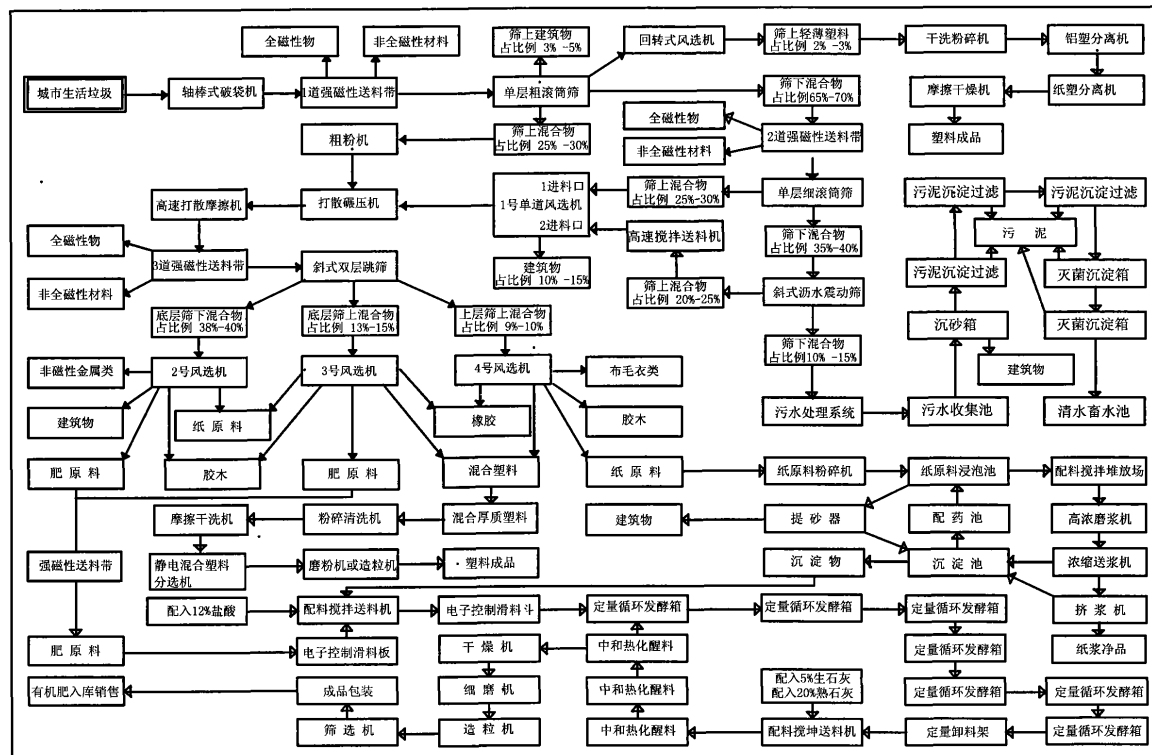
Family 30/37 - FAMPAT - ©Questel

Title

(CN101579689B)

Complete system of recycling treatment of city household garbage and a method thereof

Images



Publication data including kind & date

CN101579689	A	2009-11-18	CN101579689
CN101579689	B	2010-08-18	CN101579689B



Abstract

(CN101579689B)

The invention relates to a complete system of **recycling** treatment of city household garbage and a method thereof. The invention is characterized in that an electronic screen control system controls mechanical transmission and treatment condition of a garbage mechanical classification system, a fertilizer-making system, a plastic classification system, a pulping system and a sewage treatment system by a contact screen and a circuit, the **recycling** treatment of day treatment for day garbage, closed operation, automatic sorting, no secondary pollution and fully treatment of resources is realized finally, the city household garbage is divided into 48 types, which are combined into 15 types and seven sorts, the classification rate reaches 100 percent, the **recycling** rate reaches over 99 percent and the whole-range treatment needs 60 to 80 minutes.

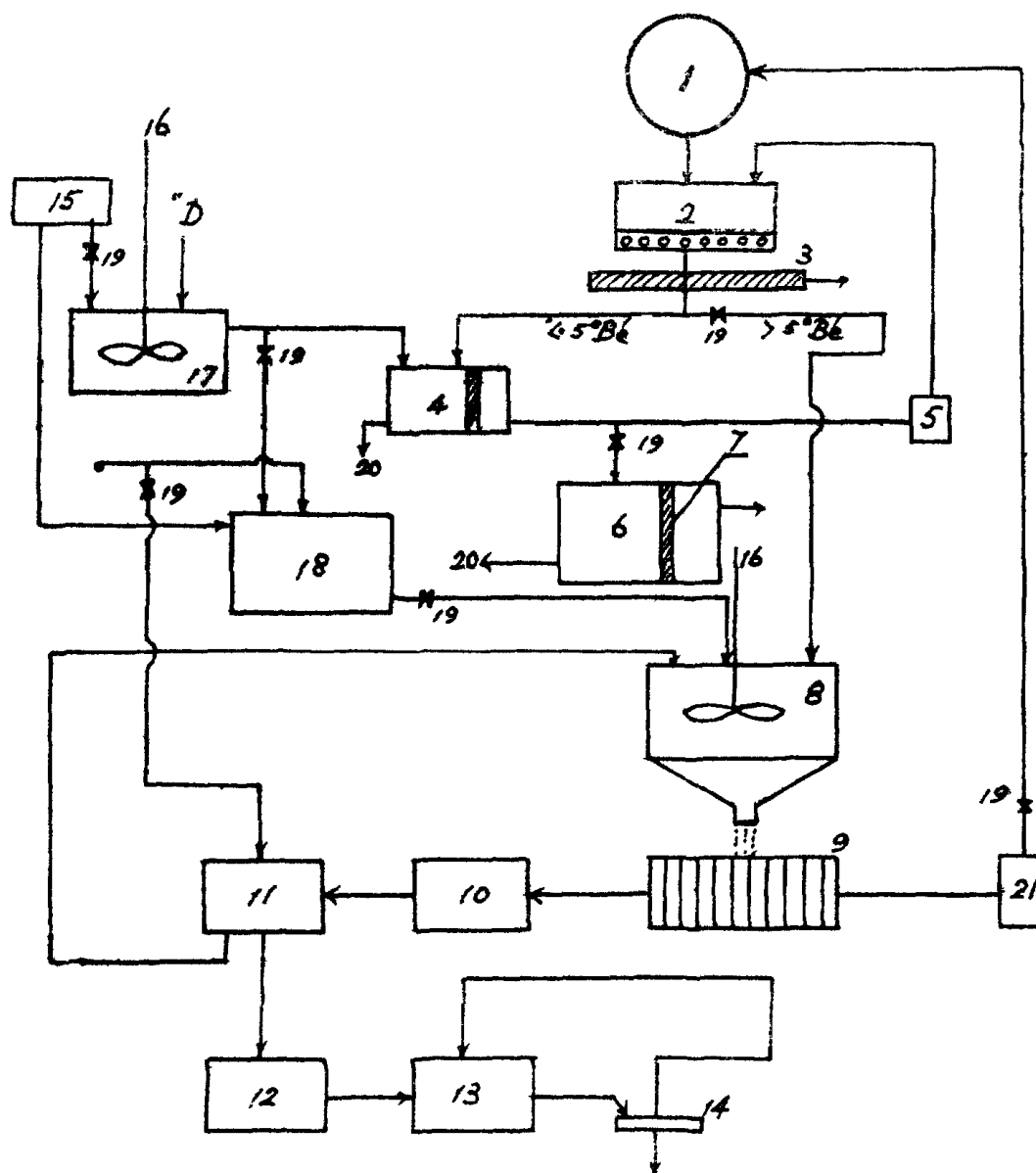
Inventors

SHAO DAODE

Family 31/37 - FAMPAT - ©Questel

Title

(CN1068613)

Treating method for black and white liquor of coda **pulp****Images****Publication data including kind & date**

CN1068613

A 1993-02-03 CN1068613

**Abstract**

(CN1068613)

The method utilizes substitution of metal ions ($M^{N+} \cdot N > 2$) in soluble chloride or nitrate and **waste** bleaching liquor under alkaline condition, and utilizes **precipitation** and adsorption to convert the **precipitate** of lignin, semi-**cellulose** and pigment into dehydrating agent for active carbon or cement, and the centrifugal liquid containing NaOH and Na₂S is used for **pulp** making, **pulp** washing and producing farm water, thus achieving comprehensive treatment and utilization of **waste** liquor in alkaline paper making.

Inventors

LIU JIAMING

HONG BIQIN

ZHUANG ZECHUN

ZHAO LEQUN

CHEN NAISAN

YANG WEIJIAN

Latest standardized assignees - inventors removed

ZHANGZHOU NORMAL UNIVERSITY COLLEGE

ZHANGZHOU NORMAL COLLEGE

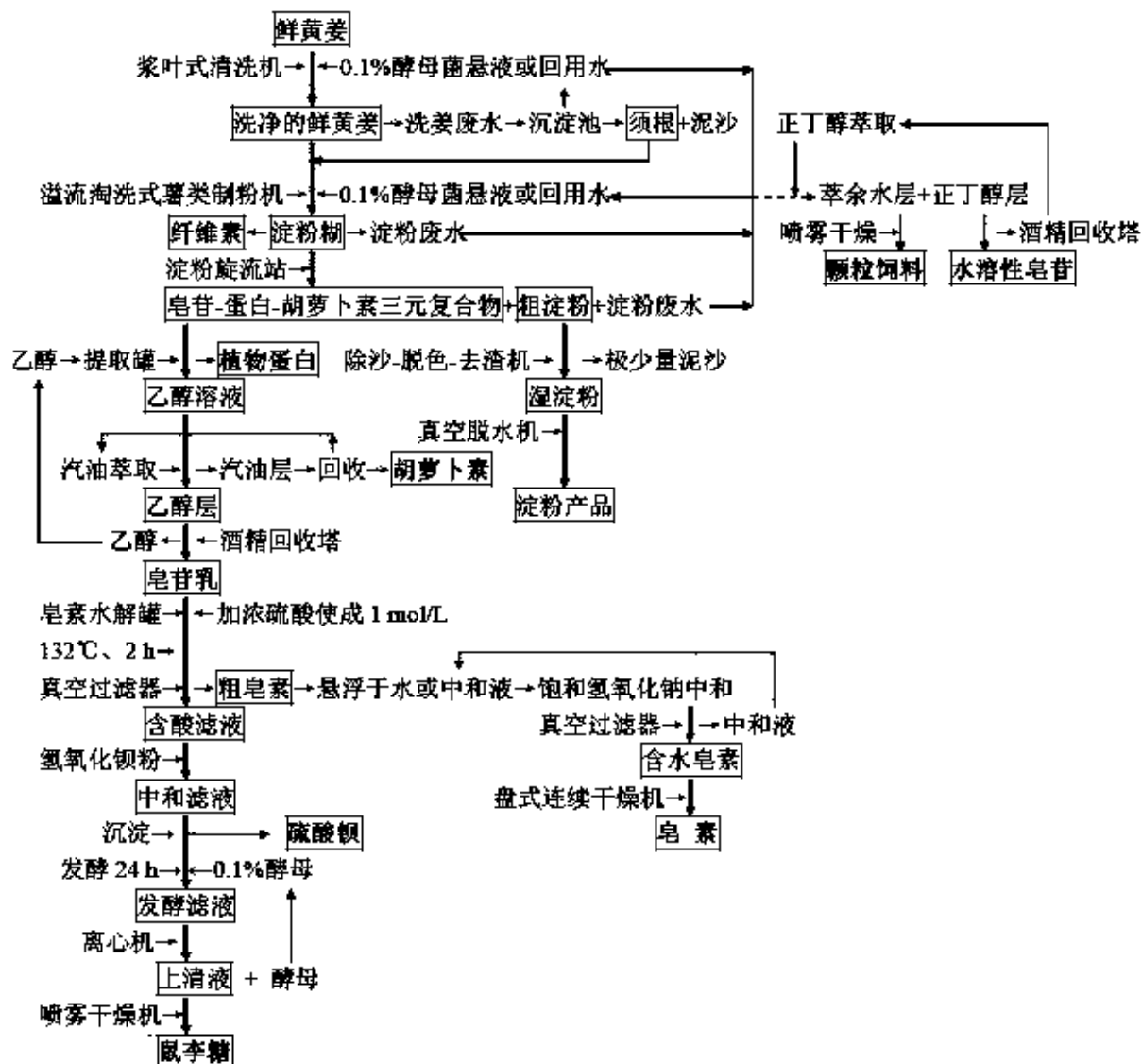
Family 32/37 - FAMPAT - ©Questel

Title

(CN102321184B)

Resource utilization technology of fresh peltate yam

Images



Publication data including kind & date

CN102321184	A	2012-01-18	CN102321184
CN102321184	B	2014-04-09	CN102321184B



Abstract

(CN102321184B)

The invention is resource utilization technology of diosgenin production by fresh peltate yam, relates to the field of pharmaceutical raw material production, and is characterized in that: firstly starch is produced by starch production machinery, and cellulose is obtained simultaneously; a saponin-protein-carotene ternary compound separated from the starch production process is further separated to obtain vegetable protein, carotene and saponin; the saponin is hydrolyzed to directly obtain diosgenin; rhamnose is produced by saponins hydrolysate; ginger-washing waste water can be recycled by adding yeast in advance, and can be used for the starch production procedure after multi-time recycling; waste water from starch production is treated by yeast, and can be used to extract water-soluble saponin after being recycled for several times, and then pellet feed can be processed. The vast majority of substances contained in peltate yam are still

maintained to be in a natural state during the production process, which facilitates the resource utilization, and reduces the acid using amount during production; no **waste** water is discharged during the whole production process, or no **waste residues** are transported outwards.

Inventors

TAN YUANYOU

Latest standardized assignees - inventors removed

WUHAN TEXTILE UNIVERSITY

Family 33/37 - FAMPAT - ©Questel

Title

(EP2683759)

Separation of lignin from plant material

Publication data including kind & date

FI20110087	A0	2011-03-09	FI201100087			
FI20110087	A	2012-09-10	FI201100087			
CA2829174	A1	2012-09-13	CA2829174			
WO2012120184	A2	2012-09-13	WO2012120184			
WO2012120184	A3	2012-12-27	WO2012120184			
CN103429642	A	2013-12-04	CN103429642			
US20130331555	A1	2013-12-12	US20130331555			
EP2683759	A2	2014-01-15	EP2683759			
EP2683759	A4	2014-08-13	EP2683759			
EP2683759	B1	2016-05-04	EP2683759			
FI126512	B	2017-01-13	FI-126512			

Abstract

(EP2683759)

Technology for separating lignin from alkaline solutions which arise in production of **cellulose** is presented. Isolated lignin can be applied, for instance, for production of carbon fibre, adhesives and binding materials, antioxidants and organic chemicals. Starting materials are non-woody plant materials, from which lignin is dissolved by sulphur free alkaline solutions at temperatures below 130°C. Lignin is **precipitated** by acid, and purified by hydrolyzing hemicellulose by acid or by enzymatic reactions or a combination of these. Lignin separated has a closely similar structure as lignin in plant material, and its content of functional atom groups can be controlled by changes in processing conditions.

Inventors

MÄLKKI YRJÖ

SIPILÄ JUSSI

Latest standardized assignees - inventors removed

CEREFI

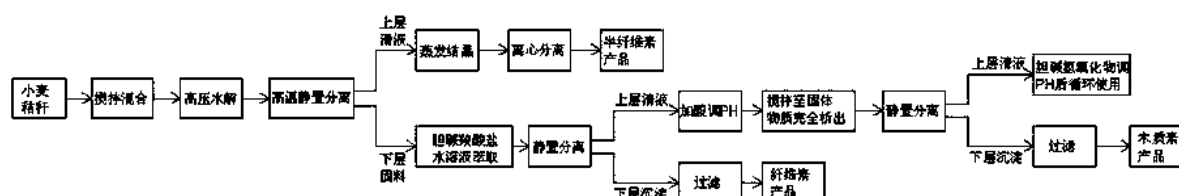
Family 34/37 - FAMPAT - ©Questel

Title

(CN103588903)

Green process for separating biomass raw materials of wheat straws

Images



Publication data including kind & date

CN103588903

A

2014-02-19

CN103588903



CN103588903

B

2016-02-10

CN103588903B

**Abstract**

(CN103588903B)

The invention relates to a green process for separating biomass raw materials of wheat straws. The green process comprises the following steps: (1) crushing the wheat straws, adding the crushed wheat straws into water, and agitating to obtain mixed slurry; (2) carrying out high-pressure hydrolysis on the mixed slurry; (3) after the hydrolysis, standing at a high temperature for separating, wherein supernatant liquid is subjected to crystal separation to obtain hemicelluloses, and lower-layer solid materials are added into a choline carboxylate water solution to extract; and (4) standing an extracted mixed material for separating, wherein lower-layer sediments are **filtered** to obtain **cellulose**; an acid solution is added into supernatant liquid to adjust a pH (Potential of Hydrogen) value, and then solid substances separated out are further separated and **filtered** to obtain lignin. The green separation process provided by the invention can separate the biomass raw materials of various components in the wheat straws so as to realize effective conversion and utilization of all the components of the wheat straws; furthermore, the difficulty that all the components of wheat straws cannot be separated in a traditional separation method is overcome and the **waste** of resources is also avoided.

Inventors

XU AIRONG

WANG JIANJI

XU HANG

WANG XIAOWEI

ZHANG YIBO

Latest standardized assignees - inventors removed

HENAN UNIVERSITY OF SCIENCE & TECHNOLOGY

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Title

(US4181796)

Process for obtaining xylan and fibrin from vegetable raw material containing xylan

Images

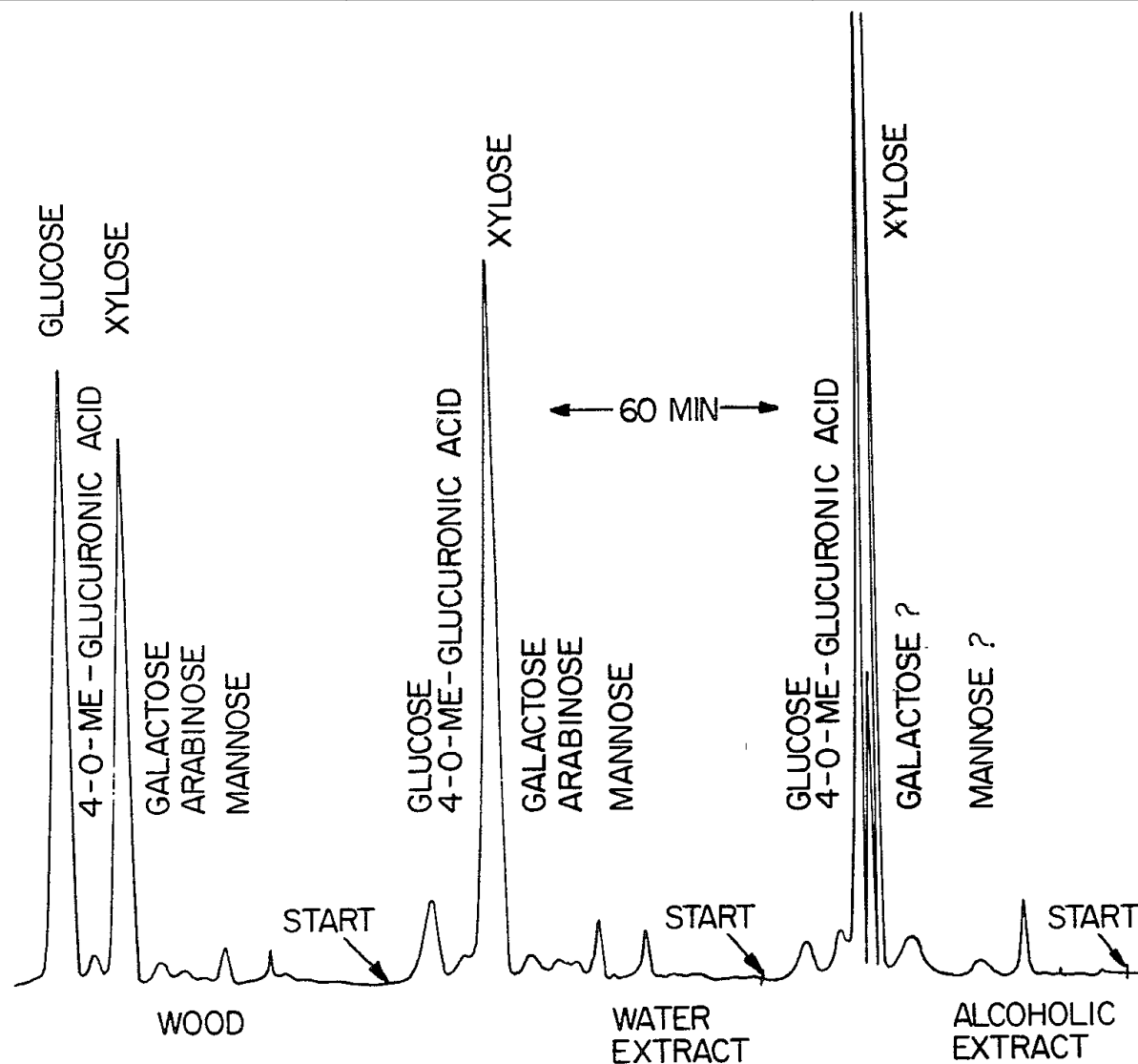


FIG 1

Publication data including kind & date

IL52551	A	1977-10-31	IL--52551
BE856967	A	1978-01-20	BE-856967
FI772234	A	1978-01-21	FI7702234
SE7708302	L	1978-01-21	SE7708302
DK326177	A	1978-01-21	DK7703261
NL7708072	A	1978-01-24	NL7708072
DE2732327	A1	1978-01-26	DE2732327
FR2359222	A1	1978-02-17	FR2359222
PL199766	A1	1978-03-13	PL-199766D
ZA7704375	B	1978-03-29	ZA7704375
JPS5335005	A	1978-04-01	JP53035005
ES460857	A1	1978-04-16	ES-460857
BR7704774	A	1978-06-06	BR7704774
IN146057	B	1979-02-10	IN-146057
IN146113	B	1979-02-24	IN-146113
AR213969	A1	1979-04-11	AR-213969
EG12625	A	1979-06-30	EG--12625
US4181796	A	1980-01-01	US4181796
ATA534676	A	1980-08-15	AT7605346



IL52551	B	1980-10-26	IL--52551				
GB1582479	A	1981-01-07	GB1582479				
AT361506	B	1981-03-10	AT-361506				
OA5710	A	1981-05-31	OA--5710				
CA1106305	A	1981-08-04	CA1106305				
RO73515	A	1981-08-30	RO--73515				
PL121396	B1	1982-04-30	PL-121396				
FI62101	B	1982-07-30	FI--62101				
FI62101	C	1982-11-10	FI--62101				
FR2359222	B1	1983-02-25	FR2359222				
CH638539	A5	1983-09-30	CH-638539				
SE432769	B	1984-04-16	SE-432769				
SU1120924	A3	1984-10-23	SU1120924				
IT1077403	B	1985-05-04	IT1077403				
HU187261	B	1985-12-28	HU-187261				
DK149552	B	1986-07-21	DK-149552				
DK149552	C	1986-12-29	DK-149552C				
JPS6221916	B2	1987-05-14	JP87021916				
JP1423737	C	1988-02-15	JP1423737				
DE2732327	C2	1988-08-11	DE2732327				

Abstract

(US4181796)

A process for the production of xylan and fibrinous material from vegetable raw material by treating the raw material with saturated steam at a temperature of from 160.degree. to 230.degree.C. for a period from 2 minutes to 4 hours.

Inventors

BRACHTHAUSER KARL-HEINZ

DIETRICH HANS-HERMANN

OPDERBECK FRITZ

SINNER MICHAEL

Latest standardized assignees - inventors removed

SUOMEN SOKERI

STAKE TECHNOLOGY

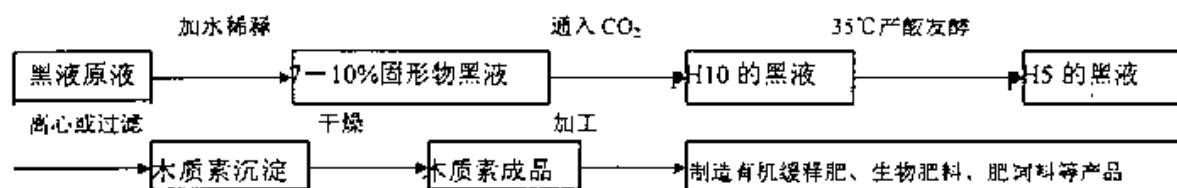
FRITZ WERNER INDUSTRIE AUSRUSTUNGEN 6222 GEISENHEIM

Family 36/37 - FAMPAT - ©Questel

Title

(CN1105688C)

Biological acid process for separating lignin from alkaline papermaking black liquor

Images**Publication data including kind & date**

CN1256253	A	2000-06-14	CN1256253				
CN1105688	C	2003-04-16	CN1105688C				

Abstract

(CN1105688C)

Soda paper-making black liquor is blended to obtain solution with solid content of 7-10% and pH value of 10, into the solution acid-producing microbial strain *Saccharomyces cerevisiae* Meyen ex Hansenis inoculated and small amount of waste molasses is added, and through static culture at 35 deg.c for 48-72 hr, the pH value of black liquor is made to reduce to 5 and lignin over 90% may be precipitated and separated. The process is simple and low in cost and produces no secondary pollution, and the separated lignin may be used as raw material for organic slow-release fertilizer and fertilizer adhesive. The biological separation process is suitable for various soda paper-making black liquor.

Inventors

ZHANG XIAOYONG

ZHANG JIANAN

LI ZUOHU

Latest standardized assignees - inventors removed

INSTITUTE OF CHEMICAL METALLURGY CHINESE ACADEMY OF SCIENCES

Family 37/37 - FAMPAT - ©Questel

Title

(EP2395084)

Transgenic plants expressing CIVPS or intein modified proteins and related method

Images

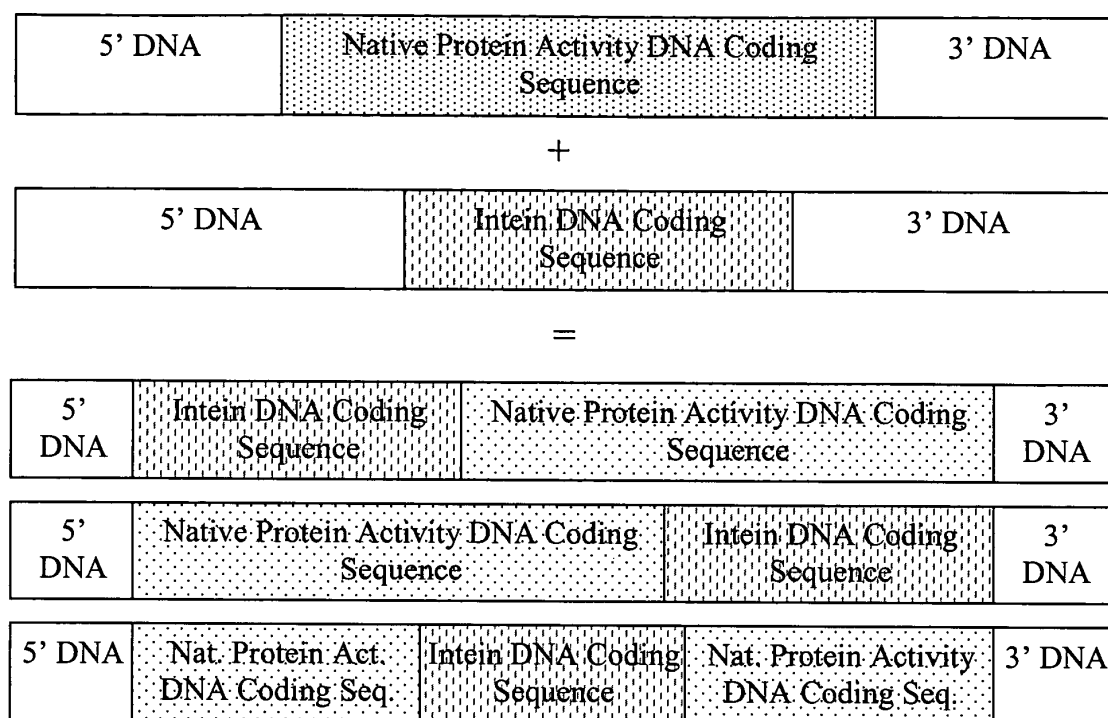


Figure 1

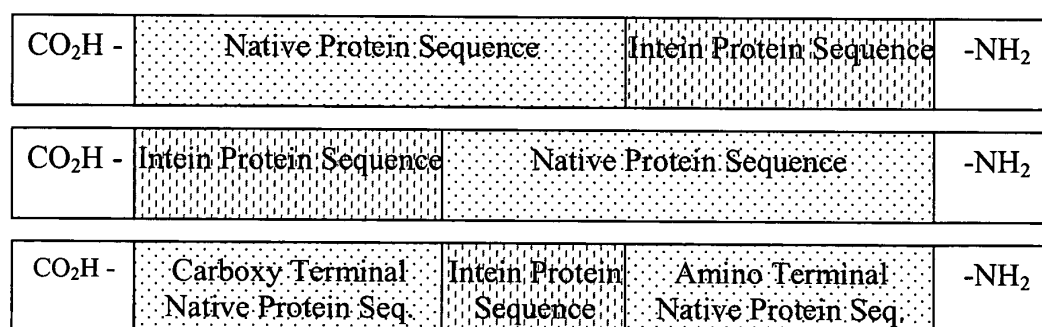


Figure 2

Publication data including kind & date

WO03056904	A2	2003-07-17	WO200356904
CA2805007	A1	2003-07-17	CA2805007
CA2472886	A1	2003-07-17	CA2472886
AU2003235745	A1	2003-07-24	AU2003235745
WO03056904	A3	2004-02-05	WO200356904
EP1468090	A2	2004-10-20	EP1468090
US20050125860	A1	2005-06-09	US20050125860
CN1633501	A	2005-06-29	CN1633501
JP2006512042	A	2006-04-13	JP2006512042
EP1468090	A4	2006-07-12	EP1468090
BRPI0307155	A1	2006-11-07	BR200307155
IN1792/DELNP/2004	A	2007-03-30	IN2004DN01792
BR0307155	A	2007-06-19	BR200307155
IN2134/DELNP/2006	A	2007-06-22	IN2006DN02134



AU2003235745	B2	2008-04-03	AU2003235745				
AU2008202938	A1	2008-08-07	AU2008202938				
IN231974	B	2009-03-27	IN-231974				
IN1758/DELNP/2005	A	2009-05-22	IN2005DN01758				
AU2003235745	C1	2009-09-24	AU2003235745				
IN4576/DELNP/2009	A	2009-12-04	IN2009DN04576				
JP2010042034	A	2010-02-25	JP2010042034				
US7709697	B2	2010-05-04	US7709697				
US20100159510	A1	2010-06-24	US20100159510				
IN242116	B	2010-08-13	IN-242116				
JP4554932	B2	2010-09-29	JP4554932				
CN1633501	B	2010-10-27	CN1633501B				
US7906704	B2	2011-03-15	US7906704				
CN101993907	A	2011-03-30	CN101993907				
CN101993890	A	2011-03-30	CN101993890				
CN102031272	A	2011-04-27	CN102031272				
US20110138502	A1	2011-06-09	US20110138502				
EP2395084	A1	2011-12-14	EP2395084				
EP2395083	A1	2011-12-14	EP2395083				
JP2012044992	A	2012-03-08	JP2012044992				
BRPI0307155	A2	2012-03-20	BR200307155				
US8247647	B2	2012-08-21	US8247647				
BRPI0307155	A8	2012-11-06	BR200307155				
US20120291160	A1	2012-11-15	US20120291160				
CA2472886	C	2013-05-28	CA2472886				
US20130318655	A1	2013-11-28	US20130318655				
IN258362	B	2014-01-03	IN-258362				
US8664476	B2	2014-03-04	US8664476				
JP5529507	B2	2014-06-25	JP5529507				
US20140314909	A1	2014-10-23	US20140314909				
EP1468090	B1	2014-10-29	EP1468090				
US8878004	B2	2014-11-04	US8878004				
ES2523869	T3	2014-12-02	ES2523869				
CA2805007	C	2015-09-08	CA2805007				
US20150353947	A1	2015-12-10	US20150353947				
JP5890130	B2	2016-03-22	JP5890130				
US9474293	B2	2016-10-25	US9474293				
EP2395083	B1	2017-04-12	EP2395083				
ES2626067	T3	2017-07-21	ES2626067				
US9888707	B2	2018-02-13	US9888707				
EP2395084	B1	2018-03-14	EP2395084				
ES2665027	T3	2018-04-24	ES2665027				
BRPI0307155	A8	2018-04-24	BRPI0307155				
BRPI0307155	A8	2018-04-24	BR200307155				
PT2395084	T	2018-04-26	PT2395084T				
BRPI0307155	A8	2018-10-23	BRPI0307155				

Abstract

(EP2395084)

A method of processing plant biomass comprising: obtaining a transgenic plant or part thereof including a first modified protein having a lignocellulosic degrading protein or a starch degrading protein and an intein fused within the lignocellulosic degrading protein or starch degrading protein, wherein the intein is inducible to cause cis splicing of the first modified protein; and inducing splicing of the modified protein in the presence of at least a portion of the transgenic plant or part thereof.

Inventors

RAAB MICHAEL R

Latest standardized assignees - inventors removed

AGRIVIDA