



New connection on: : 19-05-2018 : 21:11:16 - Last disconnection on: : 19-05-2018 : 21:11:16

V 4.0.0.44358(LP,U,linux) (Rev:43856 2017-04-27 09:03:29 +0200#(D201802)) (RPM D201802)

Welcome to EPOQUE Rebuild under the Production Environment

[EPODOC: SS 8] ..fi EPODOC

 Database: EPODOC

[EPODOC: SS 8] (well+ OR downhole) AND (oil OR gas) AND valve AND inject+ AND (system OR method) AND (flow OR pressure) AND (control+ OR regulat+) AND reductor

Results in EPODOC 0

[SS 9] (well+ OR downhole) AND (oil OR gas) AND valve AND inject+ AND (system OR method) AND (flow OR pressure) AND (control+ OR regulat+) AND reduc+

Results in EPODOC 115

[SS 10] ..v

[EPODOC: SS 10] ..li}

Unknown command or preparation. [More info](#) ERROR(-104000)

[SS 10] ..li



1/115 © EPODOC / EPO

PN - [WO2018065699](#) A1 20180412

PR - FR20160059515 20161003

AP - WO2017FR52642 20170928

DT - **

CT - |EP| ISR (A1)

[WO2016051051](#) A1 20160407 [A] (SPCM SA [FR])

[A] 1-10

* page 11, line 17 - page 31; figure 5 *;

[US2016168954](#) A1 20160616 [AD] (PICH EMMANUEL [FR], et al)

[AD] 1-10

* paragraph [0027] *

* paragraph [0042] *

* paragraph [0051] *

* paragraph [0057] - paragraph [0077]; figures 1, 2 *;

[US4782847](#) A 19881108 [AD] (LUETZELSCHWAB WAYNE E [US])

[AD] 1-10

* column 3, line 7 - column 5, line 26; figures 1-6 *;

[WO2015092334](#) A2 20150625 [A] (TOTAL SA [FR])

[A] 1-10

* page 18, line 22 - line 30; figures 3, 5, 7 *;

[FR2962153](#) A1 20120106 [A] (TOTAL SA [FR])

[A] 1-10

* page 10, line 15 - page 13, line 18; figures 1-3 *

CCI - [E21B43/20](#)

PA - SPCM SA [FR]

TI - APPARATUS FOR **CONTROLLING INJECTION PRESSURE** FOR THE ASSISTED RECOVERY OF **OIL** USING POLYMER

AB - An apparatus for **controlling the injection pressure** of a aqueous polymeric solution in an **oil well**, said apparatus being formed by: - at least one **pressure** modulation **valve**, allowing, per **valve**, a maximum **pressure** loss of 5 bars practically without any mechanical deterioration, said one or more valves being connected in line with; - a tube containing vortex modules, each creating a maximum **pressure** loss of 5 bars, practically without any mechanical deterioration, a vortex module being a section of tube, closed at one of its ends by a lid perforated with a hole, and being able to be inserted into the detachable tube; the purpose of the apparatus being that of being able to **reduce the pressure** to 100 bars with total mechanical deterioration of less than 10%. A **method** for using said apparatus.

2/115 © EPODOC / EPO

PN - [CN206475417U](#) U 20170908

PR - CN201621405871U 20161221

AP - CN201621405871U 20161221

DT - I

PA - NANJING HUAGE ELECTRONICS & AUTOMOBILE PLASTIC IND CO LTD

TI - Stock mould cooling water water pitcher and vacuum **gas** pitcher integrated **system**

AB - The utility model relates to a stock mould cooling water water pitcher and vacuum **gas** pitcher integrated **system**, including the stock mould, still include cooling water collector and the gaseous collector in vacuum in the stock mould top through link fixed mounting, be equipped with a set of water **injection well** choke on the cooling water collector, install the water **flow control** ball **valve** on the water **injection well** choke, the delivery port of water **flow control** ball **valve** communicates with the water course in the stock mould, be equipped with a set of air cock on the gaseous collector in vacuum, install **gas** ball **control valve** on the air cock, the export of **gas** ball **control valve** communicates with the air flue in the stock mould. The utility model relates to a simple reasonable, direct with water, **gas** pitcher integration to the stock mould, as long as use

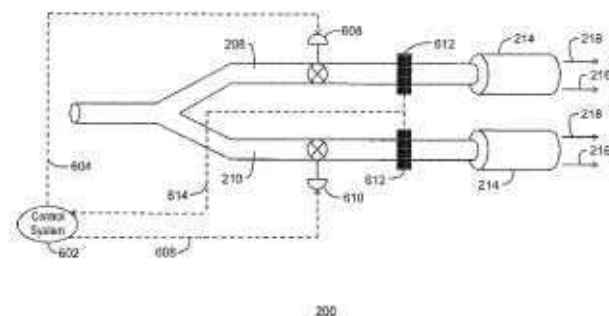
one 50mm's plastic hose with water, **gas** pitcher and lathe water, air pipe be connected can, change the time with the stock mould and **reduce** by 60 original~120min and be 30~60min. Shorten the change time of stock mould greatly, improved production efficiency, **reduce** cost.

3/115 © EPODOC / EPO

- PN - [CN206458438U](#) U 20170901
- PR - CN2017284481U 20170123
- AP - CN2017284481U 20170123
- DT - I
- PA - SINOPEC SHENGLI OILFIELD CO
- TI - **Oil field is individual well water distribution sled dress device for water injection system**
- AB - The utility model relates to an **oil field water injection technology field** especially relates to an **oil field is individual well water distribution sled dress device for water injection system**, and device compact structure is adorned to this individual **well water distribution sled**, the manufacturing is convenient, can improve on -the -spot construction and installation progress greatly, **reduces** and stops the **well time**, also there is great help to the water distribution of improvement individual **well**, water mixing transformation efficiency simultaneously. An **oil field is individual well water distribution sled dress device for water injection system**, includes: upper reaches pipeline and dirty pipeline that vertical orientation set up, both ends lead to the direct current pipeline that the turn the corner head is connected with upper reaches pipeline, dirty pipeline, the horizontal direction sets up respectively, be provided with upper reaches shut -off **valve** on the pipeline of upper reaches, the welding has angle type magneto -electric flowmeter, **flow control valve** on the direct -current tube line, set up dirty shut -off **valve** on the downspout conductor line, it has wire buckle needle type **valve** still to weld on the downspout conductor line of dirty shut -off **valve** below, installs digital **pressure gauge** on the wire buckle needle type **valve**.

4/115 © EPODOC / EPO

- PN - [RU2627871](#) C1 20170814
- PR - US201461951891P
20140312; WO2015US13883
20150130
- AP - RU20160139741 20150130
- DT - I
- CCI - [B01D17/02](#) ; [B01D17/0217](#) ;
[B01D21/2472](#) ; [E21B43/12](#) ;
[E21B43/36](#)
- CNOI - [B01D17/02](#) ; [B01D17/0217](#) ;
[B01D21/2472](#) ; [E21B43/36](#)
- CCA - [B01D2221/04](#)
- PA - EXXONMOBIL UPSTREAM RES CO
[US]



- TI - UNDERWATER **SYSTEM**
(VERSIONS) AND **METHOD** FOR
MULTIPHASE MEDIA SEPARATION
- AB - FIELD: **oil** and **gas** industry.
SUBSTANCE: underwater
separation **system** for
multiphase media containing **oil**,
water and sand, contains an
inlet manifold (204), a divider
(206), separate pipelines (208,
210) of similar diameter. An
adjustment chamber (214)
having larger diameter than the
separate pipelines (208, 210) of
similar diameter is connected to
the ends of the separate
pipelines (208, 210). The
adjusting chamber (214)
includes discharge pipelines
(216, 218) and is made to correct
the fluid **flow** rate at the
discharge pipeline. A sand
receiver (212) is connected to the
separate pipelines (208, 210),
which is located below one of
the separate pipelines (208,
210). Inside one of the separate
pipelines (208, 210) there is a jet
nozzle, connected to the lower
outlet pipeline of the adjustment
chamber (214). The underwater
separation **system** also includes
a **control valve** and a **control
system**. The multiphase fluid is
passed through separate
pipelines (208, 210) downstream
of the divider (206) and
separated into **oil** and water
phases. The solid particles are
separated. The water **flow**
through the outlet channel at the
lower end of the adjustment
chamber (214), and the **oil flow**
through the outlet at the upper
end of the adjustment chamber
(214) are provided. Water
is **injected** into the receiver
(212). A cyclone is formed to
remove sand inside the receiver

(212) and remove the stirred-up solid particles from the receiver (212) without stopping or slowing down the steps of multiphase fluid **flow** and its separation.EFFECT: invention allows to adjust flows in each line, **reduce** power consumption, increase the productivity of underwater **well**, and to create compact underwater separation **system**.17 cl, 6 dwg

5/115 © EPODOC / EPO

- PN - [CN106930715](#) A 20170707
- PR - CN20171339266 20170515
- AP - CN20171339266 20170515
- DT - I
- CNOI - [E21831/00](#)
- PA - CHINA PETROLEUM & CHEM CORP; MARINE OIL PROD PLANT SINOPEC SHENGLI OILFIELD CO LTD
- TI - Self-propelled nitrogen negative-**pressure** backflow dropping/fishing-free device for **oil**-water **well** and using **method** of device
- AB - The invention discloses a self-propelled nitrogen negative-**pressure** backflow dropping/fishing-free device for an **oil**-water **well** and a using **method** of the device. The stratum can be subjected to nitrogen negative-**pressure** backflow construction, negative **pressure** suction force is realized by releasing liquid nitrogen, the density of **well** fluid in a shaft is **reduced**, and blockages in surrounding stratum are sucked and then taken out of the ground. The device disclosed by the invention comprises a fishing cap, wherein a fishing upper anchor rod is arranged on the top of the fishing cap; an upper **pressure control** solenoid **valve** and a lower **pressure control** solenoid **valve** are respectively connected into an upper liquid nitrogen storage chamber and a lower liquid nitrogen storage chamber of the body; two ends of the body are respectively connected with the fishing cap and a lower-end cap; an upper **pressure** transfer hole and a lower **pressure** transfer hole are respectively communicated with the upper liquid nitrogen storage chamber and the lower liquid nitrogen storage chamber; a liquid nitrogen filling quick coupling I and a liquid nitrogen filling quick coupling II are respectively connected with the upper liquid nitrogen storage chamber and the lower liquid nitrogen storage chamber; an upper **injection** manifold hole and a lower **injection** manifold hole are respectively formed in the fishing cap and the lower-end cap. According to the device disclosed by the invention, the construction cost is obviously **reduced**, and the construction effect is improved.

6/115 © EPODOC / EPO

- PN - [RU2622575](#) C1 20170616
- PR - RU20160122628 20160608

AP - RU20160122628 20160608

DT - I

CT - || STSE (C1)
[RU48082U](#) U1 20050910 [];
[RU136082U](#) U1 20131227 [];
[RU2389869](#) C1 20100520 [] (DYBLENKO VALERIY PETROVICH [RU]);
[RU2578078](#) C2 20160320 [] (NIKOLAEV OLEG SERGEEVICH [RU]);
[RU2574641](#) C2 00000000 [];
[RU2571124](#) C2 20151220 [] (NIKOLAEV OLEG SERGEEVICH [RU]);
[US4907964](#) A 19900313 [] (COAL INDUSTRY PATENTS LTD [GB])

CNOI - [E21B43/16](#) ; [G05D11/00](#)

PA - PUBLICHNOE AKTSIONERNOE OBSHCHESTVO AKTSIONERNAYA NEFTYANAYA KOMPANIYA BASHNEFT [RU]

TI - **METHOD** OF FORMING A WATER-**gas** MIXTURE FOR PUMPING IN A PERFORMANCE **WELL** AND A **CONTROL SYSTEM** FOR ITS IMPLEMENTATION

AB - FIELD: **oil** and **gas** industry.SUBSTANCE: according to the **method**, a **gas**-water mixture is formed for pumping into the **injection well**. This is done by means of a mixer that is connected at the inlet to the water pipeline and the **gas** pipeline. The mixer is made with the possibility of a **controlled reduction** of the inlet **pressure** and enabling the perturbations in the formation **system** of the water-**gas** mixture to be extinguished by the **gas valve**. Measuring the water and **gas** pressures in the water and **gas** lines, is made respectively, before and after the **control** valves and monitor the **pressure** differences thereon to **control** the **flow** of water or **gas**. **Gas** consumption is limited within the operating range. To do this, the resulting **pressure** drops are compared with a given value of the minimum **pressure** drop. If the actual **pressure** drop is greater than the preset minimum, the target water and **gas flow** rates continue to be maintained. If the actual **pressure** drop becomes equal to or less than the specified minimum differential **pressure**, then the **control** signal to the **valve** via the **gas** is applied to the **valve** via the **gas** to **reduce** the **flow** rate of the **injected gas**. It is supported on the **control valve** on the water by **injecting** it into the **well**, ensuring self-tuning of the operating mode of the **well** for pumping the water-**gas** mixture. How to implement a **system** to manage the process of formation of water-**gas** compounds for **injection** into an **injection well**.EFFECT: achieving stabilization of water-**gas injection** of the mixture in the **injection** hole, preventing excessive **wellhead pressure** due to borehole **gas** phase.2 cl, 2 dwg

7/115 © EPODOC / EPO

PN - [RU2016150313](#) A 20170511

PNFP - RU2644431 C2 20180212

PR - RU20160150313 20161220

AP - RU20160150313 20161220

DT - I

CT - || STSE (C2)
[RU2451867](#) C2 20120527 [] (GAZPROM AOOT [RU]);
[RU74188U](#) U1 20080620 [];
[RU2393931](#) C1 20100710 [] (OOO KHOZRASCHETNYJ TVORCHESKIY [RU]);

[RU2004125461](#) A 20060210 [];
[CA2771670](#) C 20130402 [] (SYNODON INC [CA]);
[JP2013194752](#) A 20130930 [] (UNIV WASEDA)

- CTNP - || STSE (C2)
[] - статья "Опыт ООО "Газпром трансгаз Казань" по диагностике, эксплуатации и ремонту магистрального этанопровода", автор публикации ГИМПАHOB P.K., журнал "Газовая Промышленность" N 9 за 2015 год (ISSN 0016-5581), 2015, с:36-37.
- PA - (C2)
OBSHCHESTVO S OGRANICHENNOJ OTVETSTVENNOSTYU GAZPROM TRANSGAZ KAZAN [RU]
- TI - (C2)
METHOD FOR PROVIDING MOVEMENT MODE OF AN INTELLIGENT PIG IN THE ETHANE PIPELINE
- AB - (C2)
FIELD: measurement technology.SUBSTANCE: invention relates to **gas** supply **system** operation, in particular to organization and carrying out of non-destructive testing, and can be used to create optimal modes of movement of flaw detectors for ethane pipelines in in-line inspection. Technical task of the **method** for providing a movement mode of an intelligent pig in an ethane pipeline, including the movement of an intelligent pig at a given uniform speed, introduction of a intelligent pig into the launch (reception) chamber, replacement of air in the launch (reception) chamber with equalization of **pressure** in launch (reception) chamber, extension of the intelligent pig from the launch (reception) chamber, extension of the intelligent pig from the launch (reception) chamber, impact on the structure of the intelligent pig, partially overlapping the cross section, movement of the intelligent pig by force, created by the differential **pressure**, is achieved by the fact that the **method** is carried out in the following stages: at the first stage, with closed tap cranes 14 and 24, communications between the ethanol pipeline and **gas** pipeline are installed through spark plugs, through the spark plugs are installed with the installation of **control** valves 15 and 23, and mobile receiver connected through back-**flow** valves 26 and 27, at the second stage, the spark plugs are muffled at the points of jumper connection and plug valves 1, 2, 5, 18, 20, plug valves 6, 7, 8, 9, 12, 13, 11, 22, 21 are constantly closed, at the third stage, the plug **valve** 17 is opened, ethane is discharged between valves 17 and 18 and the intelligent pig is **injected** to the ethane pipeline space through launch (reception) chamber 28, at the fourth stage, the plug **valve** 17 is closed and plug valves 20, 16, 19 are opened to equalize the **pressure** between plug valves 17 and 18 and the **pressure** behind plug **valve** 18, at the fifth stage plug **valve** 19 is closed, and when plug valves 14, 24, 26, 27 are opened, by operation of plug valves 15 and 23, a **pressure** drop between plug valves 17 and 18 and the ethane pipeline space behind plug **valve** 18 to 2-3 atm is achieved, at the sixth stage, at the end of the surveyed section, a plug **valve** is opened to ensure discharge of **gas** mixture into the atmosphere and necessary **pressure** drop, at the seventh stage, with closed plug **valve** 19, plug valves 18 is opened, adjusting the **pressure** behind plug **valve** 18, a constant drop of 5 atm is achieved, at the eighth stage, passage of the intelligent pig is adjusted by adjusting the plug valves 15, 23, 26, 27. Sequence of actions with closing and opening the plug valves, as **well** as bleeding and parallel operation of the mobile receiver, create additional conditions for smoothing the pulsation and provide equalization of **pressure**, the possibility of carrying out in-line diagnostics without additional funds (technical, financial, etc.). Possibility of returning the **gas** mixture back to the **gas** pipeline leads to energy savings

and minimization of environmental pollution, and the replacement of ethane with cheaper methane provides **reduced** operating costs.EFFECT: technical task of the proposed **method** for providing the mode of movement of an intelligent pig in an ethane pipeline is to create a **method** for organizing the mode of movement of intelligent pigs with **regulation** of movement speed during the in-line inspection (diagnostics) of the ethane pipeline, depending on the conditions of laying the ethane pipeline and a parallel line of the **gas** pipeline using the available communications, stop valves and mobile receiver.3 cl, 1 dwg

8/115 © EPODOC / EPO

PN - [CN206129249U](#) U 20170426
 PR - CN201621040520U 20160906
 AP - CN201621040520U 20160906
 DT - I
 PA - UNIV BEIJING SCIENCE & TECH
 TI - Automatic water **injection** device of multistation
 AB - The utility model provides an automatic water **injection** device of multistation belongs to **oil** field **oil** recovery factory **well** head water **injection** technology field. The device is including total inlet tube, **well** water **injection** pipe, electric actuator, **valve** position selection mechanisms, water **injection** restriction **valve**, **well** flowmeter, thermometer, **pressure** gauge, local **control** ware, remote **control** ware etc. Every water **injection well** water **injection** rate parameter of remote **control** ware is received to the local **control** ware, and local **control** ware touchstone S -parameter output turns into the water **injection** restriction **valve**'s of every water **injection well valve** position setting value. Unmanned on duty's between the water **injection** automatic water **injection** operation can be realized simultaneously to the disposable investment and the working costs of the device's use lowering **system**, **reduces** intensity of labour by a wide margin.

9/115 © EPODOC / EPO

PN - [CN106567696](#) A 20170419
 PR - CN20151659326 20151012
 AP - CN20151659326 20151012
 DT - I
 CNOI - [E21B43/16](#)
 PA - PETROCHINA CO LTD
 TI - Liquid feeding apparatus
 AB - The invention discloses a liquid feeding apparatus, and belongs to the natural **gas** field. The liquid feeding apparatus includes a plurality of liquid storage cylinders which are arranged in a honeycomb shape, a liquid **injection** ball **valve**, a liquid feeding ball **valve**, and an automatic **control system**, wherein two ends of each liquid storage cylinder in the same row among the plurality of liquid storage cylinders are respectively connected with a first collecting pipe and a second collecting pipe; two ends of the liquid **injection** ball **valve** respectively communicate with the first collecting pipe and an **oil** jacket of a **gas** production tree of a natural **gas well**; two ends of the liquid feeding ball **valve**

respectively communicate with the first collecting pipe and an liquid **injection** pump; and the automatic **control system** communicate with the liquid **injection** ball **valve** and the liquid feeding ball **valve**, and is used for **controlling** opening and closing of the liquid **injection** ball **valve** and the liquid feeding ball **valve**. The liquid feeding apparatus utilizes a honeycomb type high **pressure** liquid storage cylinder which is formed by assembling of the high **pressure** liquid storage cylinders, so as to adapt to the demand of field for high **pressure** resistance and liquid storage amount for the storage cylinders. The liquid feeding apparatus utilizes the automatic **control** medicine adding mode to **reduce** the labor intensity of medicine adding operators in the field and save one-time investment to vehicle high **pressure** medicine adding equipment.

10/115 © EPODOC / EPO

PN - [CN106223913](#) A 20161214

PR - CN20161806705 20160906

AP - CN20161806705 20160906

DT - I

CT - || STSE (A)

[CN2625577Y](#) Y 20040714 [A] (OIL EXTRACTION TECHNOLOGY RES [CN])

[A] 1-8

* 全文 *;

[CN2769510Y](#) Y 20060405 [A] (JIANG FENG [CN])

[A] 1-8

* 全文 *;

[CN2851564Y](#) Y 20061227 [A] (SUN DIANXIN [CN])

[A] 1-8

* 全文 *;

[CN201080820Y](#) Y 20080702 [A] (YANQING LI [CN])

[A] 1-8

* 全文 *;

[RU2386021](#) C1 20100410 [A] (TATNEFT IM V D SHASHINA AOOT [RU])

[A] 1-8

* 全文 *;

[RU2387816](#) C1 20100427 [A] (TATNEFT IM V D SHASHINA AOOT [RU])

[A] 1-8

* 全文 *;

[CN203430492U](#) U 20140212 [A] (ZHEJIANG JINLONG AUTOCONTROL EQUIPMENT CO LTD)

[A] 1-8

* 全文 *;

[CN205012982U](#) U 20160203 [A] (SHANDONG ZHENGHUI PETROLEUM EQUIPMENT GROUP CO LTD)

[A] 1-8

* 全文 *;

[CN205330614U](#) U 20160622 [A] (XI'AN DONGJING MEASUREMENT AND CONTROL EQUIPMENT CO LTD)

[A] 1-8

* 全文 *;

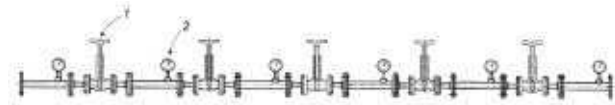
[CN206129249U](#) U 20170426 [R] (UNIV BEIJING SCIENCE & TECH)

[R] 1-5

- * 权利要求1-5 *
- CTNP - || STSE (A)
 [A] - 陈海岩, "《高压流量自控仪在吉林油田注水系统中的应用》", 《化工管理》
 [A] 1-8
 * 第15页 *
 [A] - 沈新平 王章晴, "《圆形多井式恒流配水撬》", 《油气田地面工程》
 [A] 1-8
 * 第59-60页 *
 [A] - 于大伟, "《高压水流量自控工艺》", 《油气田地面工程》
 [A] 1-8
 * 第55页 *
- CNOI - [E21B43/20](#) ; [G05D7/0617](#)
- PA - UNIV BEIJING SCIENCE & TECH
- TI - Multi-station automatic water **injection** apparatus and **control method** thereof
- AB - The invention provides a multi-station automatic water **injection** apparatus and a **control method** thereof and belongs to the technical field of **wellhead** water **injection** for oilfield **oil** extraction plants. The apparatus comprises a master water incoming pipe, a **well injection** pipe, an electric actuator, a **valve** position selector, an **injection flow** limiting **valve**, a **well flow** meter, a thermometer, a **pressure** meter, an in-place **controller**, a remote **controller** and the like. The in-place **controller** receives each **injection well injection** quantity parameter of the remote **controller**; parameter output of the in-place **controller** is converted into a **valve** position set value for the **injection flow** limiting **valve** of each **injection well**. By using the apparatus and the **method**, one-off investment and operation cost of a **system** are **reduced**, unattended automatic **injection** can be provided for an **injection** chamber, and labor intensity is greatly **reduced**.

11/115 © EPODOC / EPO

- PN - [WO2017109334](#) A1 20170629
- PR - FR20150063188 20151223
- AP - WO2016FR53415 20161214
- DT - **
- CT - |EP| ISR (A1)
[US3477467](#) A 19691111
 [XY] (SEWELL SEWOOD, et al)
 [X] 1,2
 * column 1, line 26 - line 33 *
 * column 2, line 35 - line 68 *
 * figure 1 *
 [Y] 3-7;
[US4782847](#) A 19881108
 [YD] (LUETZELSCHWAB WAYNE E
 [US])
 [YD] 3-6
 * column 1, line 14 - line 37 *
 * column 3, line 51 - line 63 *
 * column 4, line 38 - line 53 *



* figures 1,4,5 *;
[US2015041143](#) A1 20150212
 [YD] (REMY PASCAL [FR], et al)
 [YD] 7
 * paragraphs [0039] - [0043] *;
[US4510993](#) A 19850416
 [AD] (LUETZELSCHWAB WAYNE E
 [US])
 [AD] 1-7
 * column 1, line 66 - column 2,
 line 27 *
 * column 3, line 10 - line 41 *;
[US2012292029](#) A1 20121122
 [A] (SOUCY BRIAN A [US])
 [A] 1-7
 * paragraphs [0065] - [0067] *

- CCI - [E21B43/16](#)
- PA - SPCM SA [FR]
- TI - APPARATUS FOR **REGULATING**
INJECTION PRESSURE IN
 ASSISTED **OIL** RECOVERY
- AB - Apparatus for **regulating**
 the **pressure** at which an
 aqueous polymer solution
 is **injected** into an **oil well**, the
 said apparatus being made up of
 a series of linear tubes each
 fitted with a **pressure** gauge (2),
 each tube being separated by
 a **valve**, characterized in that the
 valves are ring-seal gate valves
 (3) and/or needle valves
 (1). **Method** for **reducing**
 the **pressure** at which an
 aqueous polymer solution
 is **injected** as a function of
 the **pressure** of the **well** using the
 apparatus.

12/115 © EPODOC / EPO

- PN - [CN205858308U](#) U 20170104
- PR - CN20162572112U 20160614
- AP - CN20162572112U 20160614
- DT - I
- PA - CHINA PETROLEUM & CHEM CORP; SINOPEC RES INST PETROLEUM ENG
- TI - Integration staged fracturing completion pipe string

AB - The utility model provides an integration staged fracturing completion pipe string comprises upper portion completion pipe string and lower part completion pipe string, a serial communication port, upper portion completion pipe string includes that top - down sets gradually the relief **valve** on **oil** pipe, mobile nipple joint, multistage **gas** lift **valve**, first nipple joint, the chemical **injection valve** of being located, lower part completion pipe string includes from the preceding intubate packer that sets gradually backward on the sleeve pipe, inflation packer, bowling sliding sleeve, open hole packer, **pressure** differential sliding sleeve, circulation isolating **valve**, wherein, bowling sliding sleeve, open hole packer, **pressure** differential sliding sleeve form a set of sliding sleeve fracturing unit, sliding sleeve fracturing unit sets gradually one set at least. The utility model provides an integration staged fracturing completion pipe string exploitation **method** that adopts self -blowing and **gas** lift to combine together, can realize staged fracturing, test and production integration, shorten the **well** completion cycle, **reduce oil** layer pollution, protection **oil** layer. This tubular column has functions such as high temperature resistant, high **pressure** resistant, anticorrosive, wax **control** and asphaltine.

13/115 © EPODOC / EPO

PN - [CN106150460](#) A 20161123

PR - CN20161724101 20160825

AP - CN20161724101 20160825

DT - I

PA - PETROCHINA CO LTD; DAQING OILFIELD CO LTD

TI - Water **injection well** layered testing and **regulation** process device and testing and **regulation method** thereof

AB - The invention belongs to the technical field of **oil** production engineering of oilfields, particularly relates to a water **injection well** layered testing and **regulation** process device and a testing and **regulation method** thereof, and solves the problem that overall process cost is over high in a cable directly **controlled** water distribution **method**. According to the water **injection well** layered testing and **regulation** process device and the testing and **regulation method** thereof, a ground measurement and **control system** and a layered water **injection** tubular column with an intelligent water distributor (7) are used, **pressure-flow** curves of various layers are measured, and layer water **injection** amount is realized by current opening of a **wellhead** water **injection valve** (2) with **injection pressure** and **flow**. The water **injection well** layered testing and **regulation** process device and the testing and **regulation method** thereof have the advantages that the over high cost in the cable directly **controlled** water distribution **method** is **reduced**; testing and **regulation** can be realized on the ground; and a testing and **regulation** instrument is not required to trip in the **well** and the like.

14/115 © EPODOC / EPO

PN - [CN105986771](#) A 20161005

PR - CN2015172116 20150211

AP - CN2015172116 20150211

DT - I

CT - || STSE (A)

[RU2136874](#) C1 19990910 [A] (KA, et al)

[A] 1-10

* 全文 *;

[CN102031945](#) A 20110427 [X] (XIAOFENG XIE)

[X] 1-10

* 说明书第4-36段、附图1-2, 3-1~3-4 *;

[CN203835359U](#) U 20140917 [A] (KARAMAY XINKEAO PETROLEUM TECHNOLOGICAL CO LTD)

[A] 1-10

* 全文 *;

[CN203978384U](#) U 20141203 [A] (KARAMAY XINKEAO PETROLEUM TECHNOLOGICAL CO LTD)

[A] 1-10

* 全文 *;

[CN204703803U](#) U 20151014 [L] (XIE XIAOFENG)

[L] 1-4

* 权利要求1-4 *

- PA - XIE XIAOFENG
- TI - Continuous hydraulic negative **pressure** pulse plug removal **system** and use **method** thereof
- AB - The invention provides a continuous hydraulic negative **pressure** pulse plug removal **system** which comprises a production tree, a main **control valve**, a liquid **injection valve**, an air pump, a **control** box and a water tank truck. The production tree communicates with a mineshaft; the main **control valve** is arranged at an **oil** pipe emptying portion of the production tree through a tee **valve**, connected with the air pump through a **gas** supply pipeline and connected with the water tank truck through a blowdown pipeline; the main **control valve** is further connected with the **control** box through a **control** signal line; and the liquid **injection valve** is an **oil** pipe **injection valve** on the production tree or is arranged in the annular space of an **oil** pipe and a sleeve pipe of the production tree and communicates with a liquid source. The invention further discloses a **method** for using the continuous hydraulic negative **pressure** pulse plug removal **system**. Liquid is discharged by circularly pressurizing **injected** liquid and instantly releasing **pressure**, continuous positive and negative **pressure** pulses are formed, plugs are discharged out of a **well** along with discharged liquid, and environmental pollution is **reduced** compared with a chemical **method**.

15/115 © EPODOC / EPO

PN - [CN205314962U](#) U 20160615

PR - CN2016251682U 20160120

AP - CN2016251682U 20160120

DT - I

PA - SHAANXI HAISHAN ENV PROT ENERGY TECH CO LTD

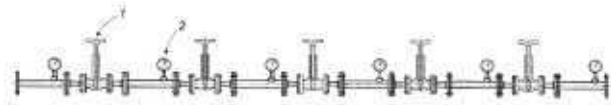
TI - Greasy dirt mud is transferred and is driven plugging device processing **system**

AB - The utility model discloses a greasy dirt mud is transferred and is driven plugging device processing **system**, including sewage sludge pond, clean water basin, stirring pond, water **injection well** and **oil** recovery **well**, passing through first pipeline and stir the pond to be connected in the sewage sludge pond, and is provided with the flowmeter

on the first pipeline, the 2nd pipeline connection is passed through in clean water basin and stirring pond, and is provided with the **valve** on the second pipeline, still be provided with medicament filling opening and agitator on the clean water basin, the clean water basin passes through the third pipeline to be connected with the water **injection well**, and has set gradually flowmeter, **pressure** gauge and **valve** on the third pipeline, the **valve** is adjacent with the water **injection well**, this greasy dirt mud is transferred and is driven plugging device processing **system**, it has provided an oiliness mud and adds proper amount polymer and transfer the technique of driving through oiliness mud deep profile **control**, effectively solve the water **injection** folk prescription to advance by leaps and bounds, sweep efficiency is low, the **oil well** inhomogeneous problem of being benefited improves **oil well** yield, **reduction oil** field moisture content rising velocity, the practicality is strong, easily uses widely.

16/115 © EPODOC / EPO

- PN - [US2016168954](#) A1 20160616
- PR - FR20150063188 20151223
- AP - US201615049575 20160222
- DT - *; Rep
- CCI - [E21B43/16](#)
- PA - SPCM SA [FR]
- TI - Device For **Regulating Injection Pressure** In Enhanced **Oil Recovery**
- AB - A **pressure regulating** device for the **injection** of an aqueous polymer solution into an **oil well**, the device consisting of a series of straight tubes each with a **pressure** gauge, each tube being separated by a **valve**, where the valves are gate valves and/or needle valves. A **method** to **reduce** the **injection pressure** of an aqueous polymer solution according to the **pressure** of the **well** using the device.



17/115 © EPODOC / EPO

- PN - [CN205260015U](#) U 20160525
- PR - CN201521069247U 20151221
- AP - CN201521069247U 20151221
- DT - I
- PA - TIANJIN CITY BINHAI NEW DISTR XINGHONGDA PETROLEUM EQUIPMENT CO LTD
- TI - **Oil** -field flooding ground is constant current water distribution device for **well**
- AB - The utility model relates to an **oil** -field flooding ground is constant current water

distribution device for **well**, including **valve** body, check **valve** part and constant current water distribution core branch, the radially solid dress of **valve** barrel that constant current water distribution core divides is on the **valve** body, and at **valve** barrel upper portion coaxial arrangement **valve** shaft, this **valve** shaft is through pressing the cap **pressure** equipment on the **valve** barrel, **valve** shaft lower extreme coaxial arrangement case in the **valve** barrel, this case lower extreme coaxial arrangement hood, the coaxial top mounted cavity plunger of lower extreme of this hood, the lower extreme coaxial arrangement filter cap of this plunger, coaxial suit outer tube outside the plunger has the spring at case lower part overcoat, and at the lower bottom coaxial fixed mounted of a cavity plunger constant voltage board, this constant voltage board axis position **system** has intake water via hole. This device is mechanical constant current mechanism owing to what adopt, without the power, has **reduced** circular telegram facility and power consumption cost, change the ground **control** into by past underground dominant discharge, both made things convenient for the adjustment **injection** allocation, saved again to throw and dragged for the cost, in the aspect of even water **injection** in oil field stratum and **well** -flushing pressurize drainage, have high using value.

18/115 © EPODOC / EPO

- PN - [CN205225221U](#) U 20160511
- PR - CN20152919542U 20151118
- AP - CN20152919542U 20151118
- DT - I
- PA - PETROCHINA CO LTD
- TI - **Oil** -field flooding **well** real -time diagnosis early warning **system**
- AB - The utility model provides an **oil** -field flooding **well** real -time diagnosis early warning **system**, including data acquisition terminal, wireless server, failure diagnosis and early warning unit, a **pressure** sensor, the 2nd **pressure** sensor, the water quality testing appearance installed at the water **injection well** head are installed at the **flow** measurement of water **injection** valves appearance, **flow control valve**, the utility model provides an **oil** -field flooding **well** real -time diagnosis early warning **system** has realized automatic diagnosis of water **injection well** trouble and real -time early warning, **reduces** site management personnel's intensity of labour and scene and patrols and examines the number of times, failure diagnosis and early warning real -time are strong, and the rate of accuracy is high, can in time discover the water **injection well** trouble and handle, promote the meticulous water **injection** level of water **injection well**, ensure water **injection** development effect, change the water **injection well** supervisor mode, **reduced** work load and high voltage ring border operating time such as artificial timing is patrolled and examined, analysis, promoted water **injection** level of **control**, **reduced** safe risk.

19/115 © EPODOC / EPO

- PN - [CN105569654](#) A 20160511
- PR - CN20151931327 20151215
- AP - CN20151931327 20151215
- DT - I

CNOI - [E21B49/086](#) ; [G01N33/0011](#) ; [G01N33/0016](#)

CNOA - [E21B2049/085](#)

PA - PETROCHINA CO LTD

TI - **Gas** component detector of air **injection** development producing **well** and detection **method**

AB - The invention discloses a **gas** component detector of an air **injection** development producing **well** and a detection **method**. The **gas** component detector comprises a casing, wherein a sample separating line, a component detecting line and a communication unit are arranged in the casing; an inlet is connected with a casing **valve** of an **oil** producing **wellhead**; the sample separating line comprises a first magnetic **valve**, a primary sample separator, a second magnetic **valve**, a secondary sample separator, a third magnetic **valve** and a first one-way **valve** which are sequentially connected in series; the first magnetic **valve** is connected to the inlet; the first one-way **valve** is connected to a first outlet; the component detecting line comprises a fourth magnetic **valve**, a **pressure reducing valve**, a drying and cleaning device, a **gas** component detecting probe and a second one-way **valve** which are sequentially connected in series; the fourth magnetic **valve** is connected to the primary sample separator; the second one-way **valve** is connected to a second outlet; the communication unit is connected to all the magnetic valves and the **gas** component detecting probe, and is used for receiving **control** commands from a terminal and transmitting detection results to the terminal. The **gas** component detector **reduces** the risk and can guarantee the detection timeliness and accuracy.

20/115 © EPODOC / EPO

PN - [CA2920032](#) A1 20160418

PR - FR20150063188 20151223

AP - CA20162920032 20160205

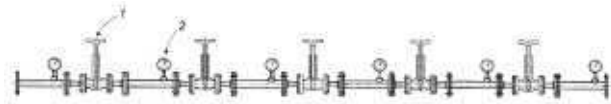
DT - I

CCI - [E21B43/16](#)

PA - SPCM SA [FR]

TI - DEVICE FOR **REGULATING INJECTION PRESSURE** IN ENHANCED **OIL** RECOVERY

AB - A **pressure regulating** device for the **injection** of an aqueous polymer solution into an **oil well**, said device consisting of a series of straight tubes each with a **pressure** gauge, each tube being separated by a **valve**, characterized in that the valves are gate valves and/or needle valves. A **method** to **reduce** the **injection pressure** of an aqueous polymer solution according to the **pressure** of



the **well** using the device.

21/115 © EPODOC / EPO

PN - [CN105548475](#) A 20160504

PR - CN20151932971 20151215

AP - CN20151932971 20151215

DT - I

CT - || STSE (A)

[CN101029564](#) A 20070905 [A] (XINAN PETROLEUM UNIV [CN])
[A] 1-8

* 全文 *;

[CN201635659U](#) U 20101117 [A] (UNIV SOUTHWEST PETROLEUM)
[A] 1-8

* 全文 *;

[CN201843610U](#) U 20110525 [A] (PETROCHINA CO LTD)
[A] 1-8

* 全文 *;

[CN105092779](#) A 20151125 [X] (PETROCHINA CO LTD)
[X] 1-8

* 第0010-0012、0022、0049、0057-0066、0076段及附图1 *

CNOI - [G01N33/0004](#) ; [G01N33/0036](#) ; [G01N33/0047](#)

PA - PETROCHINA CO LTD

TI - **Injection well gas** component detection instrument and **method** for air **injection** exploitation

AB - The invention discloses an **injection well gas** component detection instrument and **method** for air **injection** exploitation. The **gas** component detection instrument comprises a housing, the housing is internally provided with a sampling and separating line, a component detection line and a communication unit, and an inlet is connected to an **injection well** head casing **valve**; the sampling and separating line comprises a first **pressure-reducing valve**, a first solenoid **valve**, a sampling buffer tank, a second solenoid **valve** and a first non- return **valve** which are connected by pipelines in series connection in order, the first **pressure-reducing valve** is connected to the inlet, and the first non-return **valve** is connected to a first outlet; the component detection line comprises a third solenoid **valve**, a second **pressure-reducing valve**, a drying and cleaning device, a **gas** component detection probe and a second non-return **valve** which are connected by pipelines in series connection in order, the third solenoid **valve** is connected to the sampling buffer tank, and the second non-return **valve** is connected to a second outlet; and the communication unit is connected to each solenoid **valve** and the **gas** component detection probe, and is used for receiving **control** instructions from a terminal and transmitting detection results to the terminal. The instrument and **method** **reduce** sampling risks, and guarantee timeliness and accuracy of detection.

22/115 © EPODOC / EPO

PN - [CN105464626](#) A 20160406

PR - CN20151831650 20151117

AP - CN20151831650 20151117

DT - I

CNOI - [E21B43/00](#) ; [E21B43/34](#)

PA - CHINA UNIV OF PETROLEUM (EAST CHINA)

TI - **Injection** drainage type **gas**-liquid separation casing pipe **gas** recovery equipment and **method**

AB - The invention provides **injection** drainage type **gas**-liquid separation casing pipe **gas** recovery equipment, which is used for recovering associated casing pipe **gas** in an oil field production process. The equipment comprises an **injection** drainage device, a mixed conveying booster pump, a **gas** collecting tube, a vertical storage tank, a liquid level meter, a **gas flow** rate meter, a **pressure** sensor, a temperature sensor, a safety **valve**, a **gas** outlet one-way **valve**, a **wellhead** connecting **valve**, an electric **valve**, a **gas** inlet **valve**, a liquid inlet **valve**, a liquid outlet **valve**, a **controller** and the like, wherein the whole is made into a picking block; the vertical storage tank, the **injection** drainage device and the mixed conveying booster pump are sequentially connected; and the **gas** collecting tube is connected to a **gas** inlet of the **injection** drainage device. In the work process, the liquid inlet **valve**, the liquid outlet **valve** and the **gas** inlet **valve** are opened; when the **pressure** of the casing pipe **gas** in the **gas** collecting tube reaches a certain value, the **controller controls** to start the mixed conveying booster pump, and the electric **valve** is opened in a time delay manner; liquid flows through the **injection** drainage device at a high speed and sucks in the casing pipe **gas**; after the liquid and the casing pipe **gas** are mixed, the mixture enters the vertical storage tank; **gas**-liquid separation is performed in the tank; the **gas** is output along an oil conveying pipeline; and the environment pollution and the resource waste due to casing pipe **gas** exhaust into the air or casing pipe **gas** ignition are **reduced**.

23/115 © EPODOC / EPO

PN - [CN105386914](#) A 20160309

PR - CN20151931293 20151211

AP - CN20151931293 20151211

DT - I

CT - || STSE (A)
[US5511528](#) A 19960430 [A] (IWANAGA TAKASHI [JP], et al)
 [A] 1-5
 * 全文 *;
[CN1512053](#) A 20040714 [A] (DENSO CORP [JP])
 [A] 1-5
 * 全文 *;
[CN101936244](#) A 20110105 [Y] (CHINA FAW CORP GROUP WUXI FUEL INJECTION EQUIPMENT RES)
 [Y] 1-5
 * 说明书[0013]、[0024]-[0025]、[0030]段，附图1 *;
[CN104214027](#) A 20141217 [Y] (UNIV HENAN SCIENCE & TECH)
 [Y] 1-5
 * 说明书[0016]-[0018]段，附图1 *

CNOI - [F02M55/025](#)

PA - CHINA NORTH ENGINE INST (TIANJIN)

TI - Double-rail high- **pressure** common-rail **system**

AB - The invention provides a double-rail high-**pressure** common-rail **system**. The **system** comprises a high- **pressure oil** supplying pump, an electric **control** unit, a first fuel **oil** rail, a first solenoid **valve**, common-rail **oil injectors**, a second fuel **oil** rail and an electric **control pressure regulating valve**, wherein the first solenoid **valve** is arranged between the first fuel **oil** rail and the second fuel **oil** rail; the high-**pressure oil** supplying pump is connected to the first fuel **oil** rail; the common-rail **oil injectors** are connected to the second fuel **oil** rail; a solenoid **valve** of the common-rail **oil injectors**, a **flow** metering **valve** of the high-**pressure oil** supplying pump, the first solenoid **valve** and the electric **control pressure regulating valve** are connected to the electric **control** unit. The **system** has the following advantages: the two fuel **oil** rails are arranged to stabilize the fuel **oil** storing **pressure** and the fluctuation of supplied **oil**, as **well** as stabilizing the fuel **oil injection** and the fluctuation of **injected oil**, and thus the influence of the **oil** supplying process of the high-**pressure oil** supplying pump on the **oil injecting** process can be **reduced**; the opening time and duration of the first solenoid **valve** are **controlled**, so that the **oil** supplying quantity, the **oil** supplying time and the **oil** supplying rule of the second fuel **oil** rail can be actively **controlled**.

24/115 © EPODOC / EPO

PN - [CN205047312U](#) U 20160224

PR - CN20152676403U 20150901

AP - CN20152676403U 20150901

DT - I

PA - GUANGDONG FUXING MOTORCYCLE INDUSTRY CO LTD

TI - Motorcycle electronic fuel **injection system**

AB - The utility model discloses a motorcycle electronic fuel **injection system** contains ecu, fueling **injection** equipment, air feeder, exhaust apparatus, ignition coil, engine, diagnosis module, trouble lamp etc. And air feeder contains intake pipe, air cleaner, integral type air throttle and throttle position sensor, idle speed **control valve** and the warm -pressing sensor that admits air, the fueling **injection** equipment comprises **oil** tank, fuel pump assembly, **oil** pipeline, high **pressure** fuel filter and sprayer, exhaust apparatus contains blast pipe, oxygen sensor and three way catalyst converter, be provided with crankshaft position sensor on the bent axle, be provided with cylinder body temperature sensor on the **well** jar, the ecu input is connected in fueling **injection** equipment, air feeder, exhaust apparatus, ignition coil, engine respectively, diagnoses module, trouble lamp, bracing flameout switch, emptys and be connected with the ecu output after the sensor input is connected. It is even that this kind of electricity spouts **system's oil** expenses, and energy saving and emission **reduction's** effect is showing.

25/115 © EPODOC / EPO

PN - [CN105240033](#) A 20160113

PNFP - CN105240033B B 20180206

PR - CN20151595986 20150917

AP - CN20151595986 20150917

DT - I

CT	- STSE (A) RU2262004 C1 20051010 [A] [A] 1-4 * 全文 *; CN101126402 A 20080220 [A] (ZIBO BOSHAN EXPLOSION PROOF EL [CN]) [A] 1-4 * 全文 *; CN101858337 A 20101013 [A] (ZHIMIN WANG, et al) [A] 1-4 * 全文 *; CN102302912 A 20120104 [A] (SANYHE HEAVY EQUIPMENT CO LTD) [A] 1-4 * 全文 *; CN202597010U U 20121212 [A] (TAI AN ZHENGYANG MACHINERY CO LTD) [A] 1-4 * 全文 *; CN104675431 A 20150603 [X] (FU SHICHUAN) [X] 1,4 * 说明书第【0012】段至第【0016】段，附图1-4 *
PA	- (A) XUZHOU MINING BUSINESS GROUP CO LTD
TI	- (A) Portable multipurpose pneumatic pump station device
AB	- (A) A portable multipurpose pneumatic pump station device comprises a hydraulic control system and a pneumatic control system. In the hydraulic control system, water is injected into a working portion through a pneumatic control switch handle after passing a liquid inlet, a ball valve, a pneumatic control hydraulic reversing valve, an emulsion automatic proportioning device, a one-way valve and a pressure multiplier; in the pneumatic control system, one branch of compressed air after passing an air inlet enters the pressure multiplier through the pneumatic control hydraulic reversing valve while another branch of the compressed air after passing the pneumatic control switch handle enters the pneumatic control hydraulic reversing valve and a pneumatic control reversing valve. The portable multipurpose pneumatic pump station device is light in weight and convenient to maintain, and workload and construction cost of downhole temporary supporting are reduced effectively; operation is simple, and connection and disconnection of a hydraulic pipeline and an air compression pipeline can be controlled at the same time; needs on downhole safety are met, and stepless speed regulation can be realized; the portable multipurpose pneumatic pump station device is energy saving, environment friendly and low in noise and can work by using a certain amount of compressed air, and emulsion rather than hydraulic oil is used, so that secondary pollution is avoided; the portable multipurpose pneumatic pump station device can be multipurpose by modifying, has wide popularization and application prospect and is fully utilized.
26/115	© EPODOC / EPO
PN	- CN105114043 A 20151202
PNFP	- CN105114043B B 20170704

PR - CN20151596719 20150918

AP - CN20151596719 20150918

DT - I

CT - || STSE (A)
[CN86104803](#) A 19870114 [A]
 [A] 1-6
 * 全文 *;
[WQ2008036740](#) A2 20080327 [A] (SHELL OIL CO [US], et al)
 [A] 1-6
 * 全文 *;
[CN102400667](#) A 20120404 [A] (UNIV CHANGZHOU)
 [A] 1-6
 * 全文 *;
[CN102434129](#) A 20120502 [A] (UNIV DALIAN TECH)
 [A] 1-6
 * 全文 *;
[CN102817596](#) A 20121212 [A] (HAN ZHONGSHU)
 [A] 1-6
 * 全文 *;
[CN205036353U](#) U 20160217 [R] (CHINA NAT OFFSHORE OIL CORP, et al)
 [R] 1-5
 * 权利要求1-5 *

PA - (A)
 CHINA NAT OFFSHORE OIL CORP; ZHANJIANG BRANCH CHINA NAT OFFSHORE OIL CORP

TI - (A)
System and method for increasing recovery ratio of water drainage and **gas** production by **gas** lift in deepwater **gas** field

AB - (A)
 The invention discloses a **system** and **method** for increasing recovery ratio of water drainage and **gas** production by **gas** lift in a deepwater **gas** field. The **system** comprises a **gas well gas** lift portion, a jet device pressurizing portion, an ethylene glycol **injection system** and an underwater **control** unit; the **gas well gas** lift portion comprises a **downhole gas** lift **valve**, a **gas** lift **flow regulating valve** and **gas** lift auxiliary pipelines; the jet device pressurizing portion comprises a deepwater high-**pressure** jet device, an ejected **gas flow regulating valve** and auxiliary pipelines; the ethylene glycol **injection system** comprises an ethylene glycol **injection valve** and liquid fly lines; the underwater **control** unit collects signals of the **gas well gas** lift portion, the jet device pressurizing portion and the ethylene glycol **injection system** and **controls** the **gas well gas** lift portion, the jet device pressurizing portion and the ethylene glycol **injection system**; the underwater **control** unit is in communication connection with an offshore production platform **control system** through an umbilical cable, so that a conventional scheme of an underwater centrifugal electric compressor is replaced, the later development cost of the deepwater **gas** field is **reduced**, the abandonment **pressure** of an underwater **wellhead** is **reduced**, the productive life is prolonged, and the recovery ratio of a **gas well** is increased.

PN - [CN204703803U](#) U 20151014

PR - CN2015296956U 20150211

AP - CN2015296956U 20150211

DT - I

PA - XIE XIAOFENG

TI - Stifled **system** is separated in negative **pressure** of surging in succession pulse

AB - The utility model provides a stifled **system** is separated in negative **pressure** of surging in succession pulse, including production tree, main **control valve**, notes liquid **valve**, air pump, **control** box and water -tank lorry, production tree intercommunication pit shaft, the main **control valve** passes through the three -way **valve** setting in the **oil** pipe of production tree unloading department to be connected, be connected through blowdown pipeline and water -tank lorry through **gas** supply line and air pump, the main **control valve** still is connected with the **control** box through the **control** signal line, it be **oil** pipe on the production tree and **injects** the **valve** into or set up and feed through at production tree **oil** pipe and sheathed tube annular space and with the liquid source to annotate the liquid **valve**. The utility model discloses utilizing the circulation pressurization to annotate liquid and release **pressure** drain in the twinkling of an eye, forming continuous positive negative **pressure** pulse, messenger's plug outside the discharge **well**, has **reduced** environmental pollution for chemical approach along with exhaust liquid.

PN - [WO2015123736](#) A1 20150827

PR - WO2014BR00052 20140219

AP - WO2014BR00052 20140219

DT - *; Rep

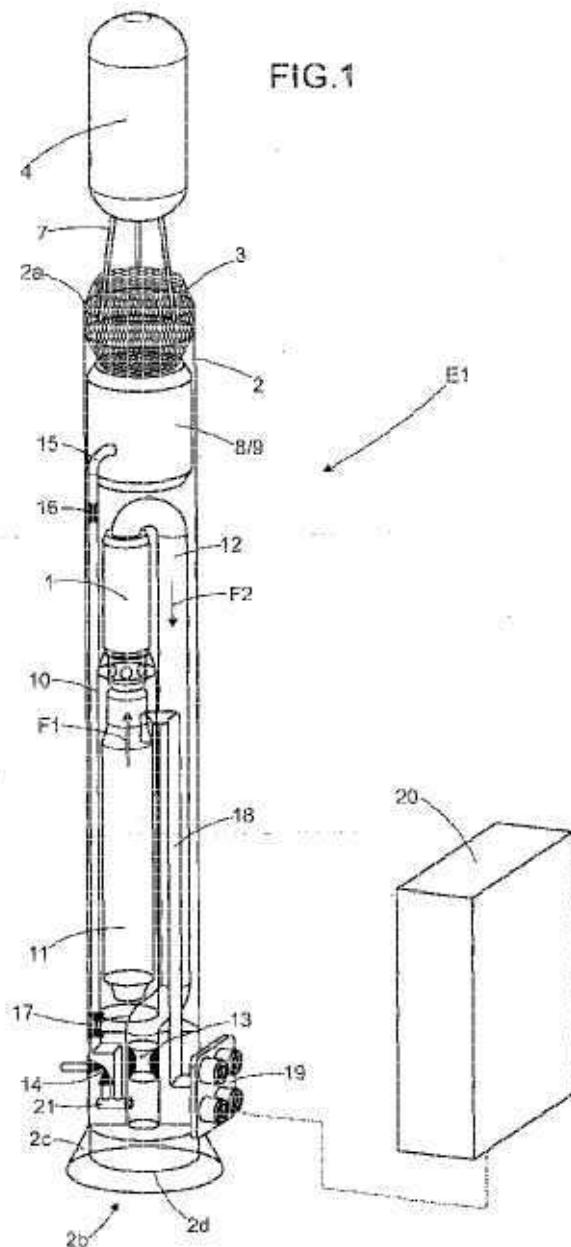
CT - |BR| ISR (A1)
[GB2457784](#) A 20090902
 [A] (SCHLUMBERGER HOLDINGS [VG])
 [A] 0;
[GB2361721](#) A 20011031
 [A] (MENTOR SUBSEA TECH SERV INC [US])
 [A] 0;
[WO2008100592](#) A1 20080821
 [A] (SAUDI ARABIAN OIL CO [SA], et al)
 [A] 0;
[WO2011084769](#) A2 20110714
 [A] (CHEVRON USA INC [US], et al)
 [A] 0;
[CN102966338](#) A 20130313
 [A] (CHINA NAT PETROLEUM CORP, et al)
 [A] 0;
[US4009756](#) A 19770301
 [A] (ZEHREN JAMES N)
 [A] 0;
[US6092600](#) A 20000725
 [A] (MCKINZIE HOWARD L [US], et al)
 [A] 0;
[US4077428](#) A 19780307
 [A] (WEAVER DALE L)
 [A] 0

CCI - [E21B43/20](#) ; [F04D13/066](#) ;
[F04D13/10](#) ; [F04D29/708](#)

PA - PETRÓLEO BRASILEIRO S A
 PETROBRAS [BR]

TI - SUBSEA **SYSTEM** FOR **INJECTION**
 OF SEAWATER BY MEANS OF A
 SUBMERGED CENTRIFUGAL PUMP

AB - Subsea **system** for **injection** of
 seawater by means of a
 submerged centrifugal pump,
 more especially relating to a
 subsea **system** for **injection** of
 water into aquifers of petroleum



or **gas** reservoirs requiring a secondary recovery **method** using water **injection**. The **system** is formed by a capture tube (2) that includes and keeps longitudinally aligned the pumping unit formed by a submerged centrifugal pump (1), a motor (11), a screen (3) or filters (6) and (8) or (9) and a **flow** measuring device (14). The stream of water is filtered through the screen (3) or filter (6) and then through the filter (8) or (9), and then flows towards the suction side of the submerged centrifugal pump (1). The suction side of the submerged centrifugal pump (1) is isolated from the discharge by means of a discharge pipe (12) or by means of a jacket (10). The capture tube (2) is able to float by means of a flotation device (4) and tethers (7) or is connected to/mounted directly onto the subsea tree (22); an ROV panel (19) is provided for connection of power cables and hoses for **injection** of chemicals, where necessary, and also comprises interfaces for **valve** operation. The speed of the motor (11), and consequently the **flow** and discharge **pressure** thereof are **controlled** by means of a speed-varying device (20) arranged externally to the capture tube (2). The present invention is mainly intended for use in **injector wells** where the **injection** of untreated seawater does not cause undesirable damage to the formation. The application thereof is directly linked to a **reduction** in water-**injection** plants installed on floating units.

TXT

- Subsea pump for **injection** of sea

water into subterranean cavities.
The pump is lengthy and held upright (vertical) by a float (4).
The sea water inlet with screen (3) and filters (8, 9) is placed close to the float, therefore at the top during operation. Inside the outer casing (2), the pump (1) and its motor (11) may be arranged in different positions, see figures. BB51800-20150917

29/115 © EPODOC / EPO

- PN - [CN204459771U](#) U 20150708
- PR - CN20142774740U 20141210
- AP - CN20142774740U 20141210
- DT - I
- PA - PETROCHINA CO LTD
- TI - **Gas** distribution **system**
- AB - The utility model discloses a **gas** distribution **system**, and belongs to the technical field of **oil** and **gas** field testing. The **gas** distribution **system** comprises a **pressure** damper, a **pressure** transmitter, a tee joint, an electric **control valve**, a parallel gate **valve** and a **gas** flowmeter, wherein the **pressure** damper, the first joint port, the second joint port, the parallel gate **valve** and the **gas** flowmeter are communicated in sequence, and the third joint port is communicated with the electric **control valve**; the **pressure** transmitter is connected with the **pressure** damper, the **pressure** damper is communicated with a nitrogen vehicle, and the **gas** flowmeter is communicated with a **wellhead**; when the **pressure** transmitter finds that the value of the pipeline **pressure** is larger than a rated **pressure** value through monitoring, the **pressure** damper releases **gas**, and when the **gas** flowmeter finds that the value of the **gas flow** is larger or smaller than that of the needed **flow** through monitoring, the electric **control valve** adjusts the **gas flow**. The **gas** distribution **system** can solve the problems that **flow** fluctuation of the **gas injected** into an **oil well** is large, stability of the **gas pressure** is poor, and accuracy of the test result is affected, and can achieve the effects that the **flow** fluctuation of the **gas** is **reduced**, **gas injection** is stabilized, and the accuracy of the test result is improved.

30/115 © EPODOC / EPO

- PN - [CN104060959](#) A 20140924
- PR - CN2013186211 20130319
- AP - CN2013186211 20130319
- DT - I
- CT - || STSE (A)
[CN2213228Y](#) Y 19951122 [A] (LUDA ENERGY RESOURCES TECHNOLO [CN])
[A] 1-10
全文
[CN201771453U](#) U 20110323 [A] (ZAIXING YU)

[A] 1-10

全文

[CN203161139U](#) U 20130828 [R] (CHEN RONG, et al)

[R] 1-7,9

权利要求1-7,10

[CN2073473U](#) U 19910320 [A] (GUO ZHENZHOU [CN])

[A] 1-10

全文

[RU2373378](#) C2 20091120 [A] (OOO NP TS NEFTEPROMTEKHNOLOGII [RU])

[A] 1-10

全文

[CN2357196Y](#) Y 20000105 [A] (LI HUALIN [CN])

[A] 1-10

全文

- CTNP - || STSE (A)
[A] 肖国华等,
"南堡油田人工岛大斜度井气举配套管柱研究", <<石油机械>>, (20111231), vol. 39,
no. 12, PAGE 52 - 54
[A] 1-10
52-54
- PA - CHEN RONG; LING YILI
- TI - Conventional **well**-flushing **valve**, pumping **well** and **well** flushing **method** for
pumping **well**
- AB - The invention discloses a conventional **well**-flushing **valve**, a pumping **well** and a **well**
flushing **method** for a pumping **well**, relates to the technical field of **oil** recovery of an
oilfield, and solves the technical problem that the **well** flushing operation in the prior
art is quite difficult. The conventional **well**-flushing **valve** comprises a main **valve**
connector, an internal **valve** part, an external **valve** part and a fluid **flow** passage,
wherein the fluid **flow** passage comprises an internal **flow** passage and an
external **flow** passage; the internal **flow** passage is arranged on the cylinder wall of the
main **valve** connector; the internal **valve** part can **control** the breakover of the
internal **flow** passage; the external **flow** passage communicated with the internal **flow**
passage is formed between an upper spacing seat and a lower connecting seat; the
external **valve** part can **control** the breakover of the external **flow** passage. The
pumping **well** comprises the conventional **well**-flushing **valve** provided by the invention.
The **well** flushing **method** for the pumping **well** comprises the following steps: opening
the conventional **well**-flushing **valve**, so as to enable the fluid **flow** passage on the
conventional **well**-flushing **valve**, a **flow** string and an **oil** sleeve to be all in the
communicated state; **injecting** flushing fluid in the **flow** string, so as to enable the
flushing fluid to **flow** through the **flow** string, the fluid **flow** passage and the **oil** sleeve in
sequence to realize the conventional **well**-flushing operation for the pumping **well**. The
conventional **well**-flushing **valve**, the pumping **well** and the **well** flushing **method** for the
pumping **well** **reduce** the difficulty of the conventional **well**-flushing operation for the
pumping **well**.

31/115 © EPODOC / EPO

PN - [RU2013101113](#) A 20140720

PNFP - RU2523270 C1 20140720

PR - RU20130101113 20130109

AP - RU20130101113 20130109

DT - I

PA - (C1)
OOO NAUCHNOE INNOVATIONNOE PRED DEL TA T [RU]

TI - (C1)
WELL CONVERSION METHOD, INCLUDING FLOODED WELLS, FOR OPERATION WITH TWO PRODUCTION STRINGS AND DEVICE FOR ITS IMPLEMENTATION

AB - (C1)
FIELD: **oil** and **gas** industry.SUBSTANCE: **method** running-in and suspension of the central production string, installation of the upper part of X-mas tree, refitting of the **wellhead** by installation of **system** for monitoring and **control** of the **well** operation, performance of **gas**-dynamics research, **flow** start-up of the **well** through two production ring and **system** for monitoring and **control** of the **well** operation. At the beginning and ending of the main production string the upper and lower bits are installed respectively and a plug and a pilot-operated **valve** in closed position is joined to the upper and lower bits. Then the central production string is mounted to the launching and lifting gear, the master **valve** is closed, a radial pipe holder is installed at the master **valve**, an a stop **valve** is installed over the master **valve** at the pipe holder, a preventer is joined to it and a double-chamber pressuriser is installed at the preventer, an **injector** is connected to the upper butt end of the pressuriser and a launching and lifting mechanism is installed in direct vicinity from the **well**. Thereafter the central production string is passed by its end through the **injector**, which is used to move the central production string, the central production string is passed through the double-chamber pressuriser, **pressure** is supplied to its closing hydraulic cavities thus compressing packing seals of the upper and lower chamber of the double-chamber pressuriser and the central production string is sealed. Then it is run down up to the master **valve** level, the central production string is run down to the position when the upper bit with plug is at the level of the **injector** upper butt end, the rod is connected to the plug, **pressure** is delivered to the opening hydraulic cavity in the upper chamber of the pressuriser, in result the packing seal of the upper chamber of the double-chamber pressuriser is released, the central production string is run down to the position when the plug is below the packing seal of the upper chamber in the double-chamber pressuriser. **Pressure** is supplied to the closing hydraulic cavity of the upper chamber in the double-chamber pressuriser thus sealing the rod. **Pressure** is supplied to the opening hydraulic cavity of the lower chamber in the pressuriser, in result the packing seal of the lower chamber in the double-chamber pressuriser is released, the central production string is run down to the position when the plug is below the packing seal of the lower chamber in the double-chamber pressuriser, thereafter **pressure** is supplied to the closing hydraulic cavity of the lower chamber in the double-chamber pressuriser thus sealing the rod, then the central production string is passed through the preventer and the stop **valve** placed over the master **valve** until seating surface of the upper bit coincides with seating surface of the radial pipe holder of the central production string, the upper bit of the central production string is fixed in the radial pipe holder of the central production string by means of radial fixtures, then the plug is removed from the upper bit by the rod, the plug is lifted higher than the level of stop **valve** placed over the master **valve**, the above stop **valve** is closed and **pressure** is supplied to the opening hydraulic cavities in the double-chamber pressuriser, in result packing seals of the

upper and lower chambers in the pressuriser are released. Thereafter the rod with plug is removed, the BOP preventer is dismantled, the launching and lifting gear is dismantled, the upper part of X-mas tree is mounted to the stop **valve** placed over the master **valve** and the above stop **valve** is opened, the pilot-**controlled valve** is subject to external action thus fixing it in an open position, in result volumes of the main and the central production strings are united. Additionally invention claims device for **method** implementation.EFFECT: **reduction** of labour intensity, costs and time for works performance.2 cl, 7 dwg

32/115 © EPODOC / EPO

PN - [CN103939064](#) A 20140723

PNFP - CN103939064B B 20160518

PR - CN20141152019 20140416

AP - CN20141152019 20140416

DT - I

CT - || STSE (A)
[WO2011135466](#) A1 20111103 [A] (SCHLUMBERGER CA LTD [CA], et al)
 [A] 1-3;
[CN201924919U](#) U 20110810 [A] (UNIV CHINA PETROLEUM)
 [A] 1-3;
[CN103291251](#) A 20130911 [A] (UNIV HENAN POLYTECHNIC)
 [A] 1-3;
[CN101915713](#) A 20101215 [A] (UNIV CHINA MINING)
 [A] 1-3

CCA - [Y02P90/70](#)

PA - (A)
 UNIV SOUTHWEST PETROLEUM; PETROLEUM PRODUCTION TECHNOLOGY RES INST JILIN
 OILFIELD BRANCH OF PETROCHINA COMPANY LTD

TI - (A)
 Simulation device and **method** used for researching two-layer supercritical
 CO2 **injection** nozzle **flow** characteristics

AB - (A)
 The invention discloses a simulation device and **method** used for researching two-layer supercritical CO2 **injection** nozzle **flow** characteristics. The device is mainly composed of a **gas** source, a filter, a supercharger, a heater, a **gas** storage tank, an electric **control** opening **valve**, a **pressure reducing valve** I, a layered **gas injection** simulation test line I, a layered **gas injection** simulation test line II and a **pressure reducing valve** V. The layered **gas injection** simulation test line I comprises a layered **gas injection** simulation test section I and a **pressure reducing valve** II, the layered **gas injection** simulation test line II comprises a layered **gas injection** simulation test section II, a **pressure reducing valve** III and a **pressure reducing valve** IV, the layered **gas injection** simulation test sections are provided with **oil** nozzles and mass **flow** meters, and **pressure** sensors and temperature sensors are connected to the positions in front of the **oil** nozzles and the positions behind the **oil** nozzles. The **method** includes the steps of preparing supercritical-state CO2 fluid, conducting **injection** allocation simulation on two layers of **oil** nozzles of the same size, conducting **injection** allocation simulation on two layers of **oil** nozzles of different sizes and obtaining a CO2 nozzle **flow** characteristic model.

The simulation device and **method** can be used for researching nozzle loss characteristics of supercritical CO₂ and provide a technological support and a theoretical foundation for layered CO₂ **injection wells**.

33/115 © EPODOC / EPO

- PN - [CN103899290](#) A 20140702
- PR - CN20141105209 20140320
- AP - CN20141105209 20140320
- DT - I
- CT - || STSE (A)
[CN102758262](#) A 20121031 [A] (CHINESE ACAD INST CHEMISTRY)
 [A]
[CN103343017](#) A 20131009 [Y] (LUOYANG ZHENGYUAN PETROCHEMICAL CO LTD)
 [Y]
[US2007062887](#) A1 20070322 [A] (SCHWANDT BRIAN W [US], et al)
 [A]
[CN203315803U](#) U 20131204 [Y] (BAOJI OILFIELD MACHINERY CO)
 [Y]
[CN202900214U](#) U 20130424 [Y] (GENG HAITAO)
 [Y]
[CN101319607](#) A 20081210 [Y] (PUYANG TIANDIREN ENVIRONMENTAL [CN])
 [Y]
- PA - BAOJI OILFIELD MACHINERY CO
- TI - Underwater compact type **oil-gas-water-solid separation system**
- AB - The invention discloses an underwater compact type **oil-gas-water-solid separation system**. An **oil-gas-water-solid** mixed transportation pipeline is communicated with a desanding assembly through a lower port of a solid-liquid separator. An upper port of the solid-liquid separator is communicated with a **gas-liquid** separator. The sidewall of the solid-liquid separator and the sidewall of the **gas-liquid** separator are respectively provided with a differential **pressure** sensor. An upper port of the **gas-liquid** separator extends out of the sea level through a **gas** cooling assembly, a **gas** compression assembly and a **gas** circuit **control valve** in sequence. A lower port of the **gas-liquid** separator is communicated with an **oil-water** separator. The sidewall of the **oil-water** separator is provided with a differential **pressure** sensor III and a liquid level sensor. An upper port of the **oil-water** separator extends out of the sea level. A lower port of the **oil-water** separator is communicated with a water channel booster pump. The lower end of the **oil-water** separator is communicated with a seawater **injection** pump through the water channel booster pump. A seawater inlet pipeline is communicated with the seawater **injection** pump and a water **injection well** through a seawater lifting pump, a degassing assembly and a seawater booster pump in sequence. The underwater compact type **oil-gas-water-solid separation system** effectively **reduces** the construction cost of a marine production platform and the workload of a marine **oil gas** processing device.

34/115 © EPODOC / EPO

- PN - [CN103786066](#) A 20140514

PNFP - CN103786066B B 20160525

PR - CN2014138473 20140127

AP - CN2014138473 20140127

DT - I

CT - || STSE (A)
[CN203792098U](#) U 20140827 [R] (SYMG HONG KONG COMPANY LTD)
 [R]
[JPH10148299](#) A 19980602 [A] (HITACHI CONSTRUCTION MACHINERY)
 [A]
[EP1741970](#) A1 20070110 [A] (LINCOLN GMBH [DE])
 [A]
[CN103527910](#) A 20140122 [A] (NINGBO JIUYUAN LUBRICATION EQUIPMENT MFG CO LTD)
 [A]
[CN202915011U](#) U 20130501 [A] (LINZHOU HEAVY MACHINERY GROUP)
 [A]
[CN202572005U](#) U 20121205 [A] (CHANGZHOU XIERUN SEIKI CO LTD)
 [A]
[CN203023773U](#) U 20130626 [A] (ZOOMLION HEAVY IND SCI & TECH)
 [A]

CNOI - (A)
[B23Q11/122](#)

PA - (A)
 SYMG HONG KONG COMPANY LTD

TI - (A)
 Hydraulic station centralized lubricating **system**

AB - (A)
 The invention discloses a hydraulic station centralized lubricating **system** which comprises a hydraulic station, a superposition type filter, a **pressure reducing valve**, a **pressure** gage, a reversing **valve**, a **pressure** relay, a pressurization type quantifying **oil injection** dispenser, a pipeline, a connector and the like. Power sources of the lubrication **system** can be **reduced**, action of the reversing **valve** is used for replacing starting and stopping of a lubricating pump in a traditional centralized lubricating mode, the feeding frequency of lubricating **oil** and feeding time can be effectively **controlled**, the pressurization type quantifying dispenser is arranged, so that the **oil** supply amount of each lubricating point is accurately **controlled**, the reversing **valve** has an unloading effect, so that the fact that the pressurization type quantifying dispense completes a whole action cycle is guaranteed, and the **pressure** relay can monitor the **flow** state of lubricating agents in the **system**. Hydraulic **pressure** and lubricating are integrated, purchasing and manufacturing cost is lowered, and meanwhile the reliability of the hydraulic lubricating **system** can be **well** improved.

35/115 © EPODOC / EPO

PN - [RU2503804](#) C1 20140110

PR - RU20120132413 20120727

AP - RU20120132413 20120727

DT - I

- CT - || STSE (C1)
[RU2278248](#) C2 20060620 [];
[RU2438005](#) C1 20111227 [] (TATNEFT IM V D SHASHINA AOOT [RU]);
[RU2300623](#) C1 20070610 [] (TATNEFT IM V D SHASHINA AOOT [RU]);
[SU1472482](#) A1 19890415 [] (SIBIRSK NII NEFTYANOJ PROMY [SU]);
[RU109498U](#) U1 20111020 [];
[SU1634749](#) A1 19910315 [] (MO SP P KT B GIDROTEKHNIЧЕСKI [SU], et al);
[CN102305042](#) A 20120104 [] (PETROCHINA CO LTD, et al)
- PA - TATNEFT IM V D SHASHINA AOOT [RU]
- TI - **METHOD** FOR MAINTAINING FORMATION **PRESSURE** AND DEVICE FOR ITS IMPLEMENTATION
- AB - FIELD: **oil** and **gas** industry. SUBSTANCE: invention includes pumping of cluster pumping station fluid equipped with inlet and discharge water conduit through comb unit and **injection wells** into the formation in cyclic mode with regular stop of cluster pumping station operation. In the period of low outside temperatures at cluster pumping station stop there performed is a cluster **controller** adjusted by **flow** direction and volume fluid discharge from **injection wells** with close reservoir properties through discharge water conduit and bypass line into inlet water conduit or process tank. Fluid discharge volume is made with provision of multiple replacement of water in **wellhead** zones of **injection wells**. Device includes cluster pump station with inlet and discharge water conduits with **flow** metre, comb unit, connected to discharge water conduit of cluster pump station and water conduits of **injection wells** fitted with shut-off valves, and cluster **controller** connected to shut-off valves **control** units. Note that inlet water conduit and discharge water conduit between **flow** metre and cluster pumping station are connected via bypass line to adjusted by hydraulic resistance, equipped with process tank and shut-off-**control** valves made in the form of adjustable **valve** gates mounted capable of opening and closing of cross-flows from bypass line into inlet water conduit or process tank, as **well** as for closing bypass line at switching on, cluster pumping station. Note that the **flow** metre is connected to the communication channel about **flow** direction and fluid volume with cluster **controller**. EFFECT: **reduction** of material costs for water conduit servicing and repair in case of danger of their freezing and plugs formation. 2 cl, 1 tbl, 1 ex, 1 dwg

36/115 © EPODOC / EPO

- PN - [CN202884481U](#) U 20130417
- PR - CN20122615224U 20121120
- AP - CN20122615224U 20121120
- DT - I
- PA - SHANGHAI SK CHEM & PET EQUIP; SHANGHAI SHENKAI PETROCHEMICAL EQUIPMENT GROUP CO LTD
- TI - Self-**controlled** alcohol **injecting** device
- AB - The utility model discloses a self-**controlled** alcohol **injecting** device. The self-**controlled** alcohol **injecting** device comprises a hydraulic **control system** and an electric **control system** which is integrally connected with the hydraulic **control system**; the hydraulic **control system** comprises an alcohol box, an alcohol pumping **control** component, an alcohol **injecting** component and a speed **regulating** component which are connected in sequence by pipelines; an outlet of the speed **regulating** component is

connected with a natural **gas well-head gas** collecting and conveying pipeline; the alcohol pumping **control** component comprises a ball **valve**, a filter and an electric hydraulic pump which are connected in sequence by the pipelines; an inlet of the ball **valve** is connected with an outlet of the alcohol box; the hydraulic **control system** also comprises an overflow **valve** and a **pressure reducing valve**; the inlet of the overflow **valve** is connected with the outlet of the electric hydraulic pump, while the outlet of the overflow **valve** is connected with an alcohol returning port of the alcohol box; and the inlet of the **pressure reducing valve** is connected with the outlet of the electric hydraulic pump, while the outlet of the **pressure reducing valve** is connected with the alcohol returning port of the alcohol box. By adopting the self-**controlled** alcohol **injecting** device, the work of **injecting** alcohol can be automatically and continuously carried out on the natural **gas well-head gas** conveying pipeline; and the self-**controlled** alcohol **injecting** device is simple in structure, stable in performance, low in production cost, convenient to use, and convenient for popularization and application.

37/115 © EPODOC / EPO

PN - [CN103045781](#) A 20130417

PNFP - CN103045781B B 20150729

PR - CN2013110176 20130111

AP - CN2013110176 20130111

DT - I

CT - || STSE (A)

[CN1064314](#) A 19920909 [Y] (IRON & STEEL RES GENERAL INST [CN])

[Y] 2-6

权利要求1

[CN200952023Y](#) Y 20070926 [Y] (SHANGHAI MEISHAN IRON & STEEL [CN])

[Y] 2-6

说明书第1页第10-23行,图2

[CN101942535](#) A 20110112 [A] (QINHUANGDAO SHOUQIN METAL MAT, et al)

[A] 1-6

全文

[CN201924032U](#) U 20110810 [A] (PANGANG GROUP STEEL VA & TI CO, et al)

[A] 1-6

全文

[CN101899542](#) A 20101201 [A] (WISDRI ENG & RES INC LTD CHINA)

[A] 1-6

全文

[JPH10109010](#) A 19980428 [A] (NIPPON STEEL CORP, et al)

[A] 1-6

全文

CTNP - || STSE (A)

[XY] 贾国利等,

"高炉瓦斯灰与煤粉混合喷吹的研究", <<中国冶金>>, (20070531), vol. 17, no. 5,

PAGE 20 - 22

[X] 1-6

20-22

[Y] 1-6

[A] 刘德军等,

"含铁碳粉尘与粉煤一同喷入高炉利用方式的优势分析", <<炼铁>>, (20110228), vol. 30, no. 1, PAGE 54 - 58

[A] 1-6

54-58

- PA - (A)
WISDRI ENG & RES INC LTD CHINA
- TI - (A)
Blast furnace **gas** dust **injection** utilizing process and device
- AB - (A)
The invention relates to a blast furnace **gas** dust **injection** utilizing process and a blast furnace **gas** dust **injection** utilizing device, wherein **gas** dust collected by a gravitational dust collector or a cyclone dust collector is conveyed into a coal **injection** pipeline in a pressurized **injection** way so that the **gas** dust enters the hearth of the blast furnace via a blast-furnace tuyere along with blast furnace **injected** coal powder for combustion; a blast furnace **gas** dust **injection** utilizing device is employed; a **control valve** is arranged on a discharging pipeline between a dust hopper and an **injection** tank; in a blast furnace coal powder **injection system**, a coal powder **injection** device is communicated with a blast furnace coal powder distributor through a blast furnace coal **injection** main pipe; the blast furnace coal powder distributor is communicated with a blast-furnace blowing-in tuyere through a coal **injection** branch pipe; a **gas** dust **injection** pipeline is arranged at the outlet end of the **injection** tank; the **injection** tank is connected to the blast furnace coal **injection** main pipe through the **gas** dust **injection** pipeline; and the connection point is in front of the inlet of the coal power distributor of the blast furnace coal powder **injection system**. The **flow** of the blast furnace **gas** dust utilization process is greatly simplified, ash flying is avoided in the **gas** dust transfer process and **gas** dust consumption in the transfer process is **reduced**; therefore, environmental protection, energy saving and consumption **reduction** are **well** realized.
- 38/115 © EPODOC / EPO
- PN - [CN202638701U](#) U 20130102
- PR - CN20122235302U 20120521
- AP - CN20122235302U 20120521
- DT - I
- PA - SHANGHAI TUBE COTE PETROLEUM PIPE COATING CO LTD
- TI - Spraying device inside steel pipe
- AB - The utility model provides a spraying device inside a steel pipe, and the spraying device comprises a spray gun traveling mechanism, a paint **injection** mechanism, a spray gun, an electric **control system**, a paint pipeline and an air pipeline. The spray gun traveling mechanism comprises a **reduction** motor, a spraying trolley and a transmission chain; the paint **injection** mechanism comprises a paint pump and a measuring pump; and the spray gun comprises a nozzle, an air motor, a needle **valve**, a transformation connector, an air pipe and a paint pipe. The spraying device inside the steel pipe adopts the high-**pressure** air as power to drive the air motor and the nozzle to rotate at a high speed, so that liquid paint is **injected** onto the inner surface of the petroleum steel pipe in a mist way, the liquid paint is dried in high temperature, solidified and formed into a high-

strength paint membrane to resist the severe application environment in an **oil well**, and the service life of the steel pipe can be multiplied.

39/115 © EPODOC / EPO

PN - [CN202597298U](#) U 20121212

PR - CN20122194561U 20120503

AP - CN20122194561U 20120503

DT - I

PA - LUZHOU CHANGJIANG PETROLEUM ENGINEERING MACHINERY CO LTD

TI - Hydraulic **oil pipe control system** for radially drilling by employing **injection head**

AB - The utility model discloses a hydraulic **oil pipe control system** for radially drilling by employing an **injection head**. A load-sensitive axial plunger variable pump, a **reducing valve**, a double load-sensitive proportional **valve**, **injection head** hydraulic motors, hydraulic brakes matched with the **injection head** hydraulic motors, a **pressure** output two-way balance **valve** and a roller follow-up loop are arranged, the working conditions of the **injection head** can be met, a phenomenon that the **oil pipe** is broken due to blockage during recovery is avoided, the safety is high, smooth radial **well** operation is ensured, and the power loss can be **reduced**.

40/115 © EPODOC / EPO

PN - [MY115179](#) A 20030430

PR - US19940301661
19940907; US19950434037
19950502

AP - MY1995PI02532 19950825

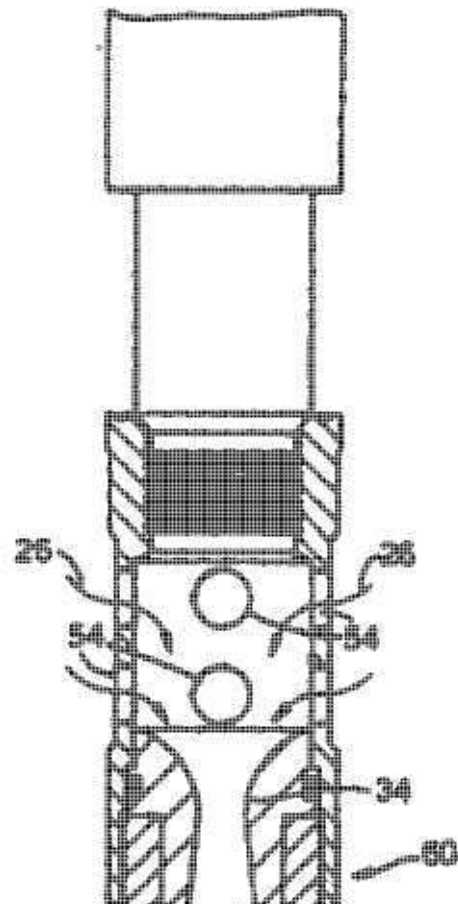
DT - I

CCI - [E21B43/123](#)

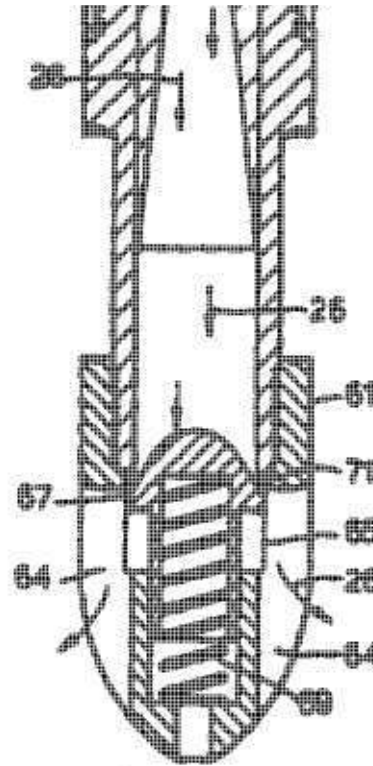
PA - HALLIBURTON CO [US]

TI - NOZZLE-VENTURI **GAS LIFT FLOW CONTROL** DEVICE AND **METHOD** FOR IMPROVING PRODUCTION RATE, LIFT EFFICIENCY, AND STABILITY OF **GAS LIFT WELLS**

AB - A **GAS FLOW CONTROL** DEVICE (60) FOR **INJECTING GAS** INTO A PRODUCTION STRING FOR RECOVERING **PRESSURE** AND **REDUCING** FRICTIONAL LOSSES, SO THAT CRITICAL **FLOW** CAN BE REACHED AT LOWER **PRESSURE** DROPS AND HIGHER PRODUCTION **PRESSURE**, INCLUDES A NOZZLE HAVING FIRST AND SECOND ENDS, AND A **FLOW** PATH THEREBETWEEN, AND A VENTURI (34) HAVING FIRST AND



VENTURI (34) HAVING FIRST AND SECOND ENDS, AND A FLOW PATH THEREBETWEEN. THE FIRST END OF THE VENTURI PORTION (34B) IS DISPOSED ADJACENT TO THE SECOND END OF THE NOZZLE. THE VENTURI FLOW PATH COAXIALLY ALIGNED WITH THE NOZZLE FLOW PATH TO PROVIDE A CONTINUOUS FLOW PATH THROUGH THE VALVE. A METHOD TO INCREASE THE PRODUCTION RATE, IMPROVE THE LIFT EFFICIENCY, AND ELIMINATE OR SUPPRESS INSTABILITY IN CONTINUOUS-FLOW GAS LIFT WELLS BY USE OF A FLOW CONTROL DEVICE THAT HAS A GAS FLOW RATE PERFORMANCE THAT IS INDEPENDENT OF THE TUBING PRESSURE EVEN WHEN THE TUBING PRESSURE IS AS HIGH AS 80 TO 93 OF THE CASING PRESSURE (FIG. 6A)



- 41/115 © EPODOC / EPO
- PN - [CN202531145U](#) U 20121114
- PR - CN2012223048U 20120118
- AP - CN2012223048U 20120118
- DT - I
- PA - PETROCHINA CO LTD
- TI - Foam drainage agent long-distance automatic **injecting** device for **gas** recovery through foam drainage
- AB - The utility model discloses a foam drainage agent long-distance automatic **injecting** device for **gas** recovery through foam drainage and is designed for achieving the purposes of single-**well** data long-distance transmission and achieving automatic remote **injection** of the foam agent by a **control system** of a **gas** gathering station. The foam drainage agent long-distance automatic **injecting** device comprises a miniature diaphragm pump, an **oil** pipeline, a reversing **valve**, a plunger cylinder, an inlet check **valve**, an outlet check **valve**, a drug storage tank, and the like. The miniature diaphragm pump is respectively connected with a filter, a hydrocylinder and an energy storage tank. The **oil** pipeline is respectively connected with the plunger cylinder, a pilot **valve** and the reversing **valve**. The reversing **valve** is provided with a **valve** core. A plunger and a compression cylinder are arranged in the plunger cylinder. The inlet check **valve** and the outlet check **valve** are respectively connected with the compression cylinder. The foam agent long-distance automatic **injecting** device is interlinked with a single- **well** long-distance transmission **system**, achieves long-distance start-stop operations on a computer platform in the **gas** gathering station, uses solar energy as

power, and **injects** foam drainage agents at fixed time and in fixed quantity. In addition, the foam drainage agent long-distance automatic **injecting** device for the **gas** recovery through the foam drainage can increase liquid carrying ability of a **gas well**, **reduce** labor intensity of workers, improve on-site work environment, decrease relevant application programs of a **pressure** vessel, **reduce** safety risks of a **well** site, simultaneously achieves specific **injection** systems of various **gas wells**, and facilitates economy large-scale exploitation of a low-yield low-efficiency **gas** field.

42/115 © EPODOC / EPO

PN - [CN102747992](#) A 20121024

PNFP - CN102747992B B 20150128

PR - CN20121245216 20120716

AP - CN20121245216 20120716

DT - I

CT - || STSE (A)

[CN202788785U](#) U 20130313 [R] (XINJIANG PETROLEUM PROSPECTING DESIGN AND RES INST CO LTD)

[R] 1-4

权利要求1-4

[CN101852073](#) A 20101006 [A] (XINJIANG DELAN CO LTD)

[A] 1-5

全文

[CN201671609U](#) U 20101215 [Y] (SHAANXI TIANCHENG PETROCHEMICAL EQUIPMENT CO LTD)

[Y] 1,4

说明书附图1

[CN1105096](#) A 19950712 [A] (XINKAI GENERAL PILOT FACTORY X [CN])

[A] 1-5

全文

CTNP - || STSE (A)

[] 杜鑫等,

"密闭注水工艺在低渗油田的应用", <<石油化工应用>>, (20101225), no. 12

PA - (A B)

XINJIANG PETROLEUM PROSPECTING DESIGN RES INST CO LTD

TI - (A B)

Airtight no-tank electric **control valve** double-**control** water **injection** device and water **injection method** thereof

AB - (A)

The invention relates to the technical field of thin/thickened **oil** and purified water **injection** after **oil** field treatment and discloses an airtight no-tank electric **control valve** double-**control** water **injection** device for thin/thickened **oil** and purified water mixed **injection** and a water **injection method** thereof. The device comprises a thickened **oil** and purified water source, a thin **oil** and purified water source, a first tee joint, a second tee joint, a purified water tank, an efflux pump, a thickened **oil well** area steam-**injection** boiler, a water **injection** pump and a thin **oil** area water **injection well**, wherein a water outlet of the thickened **oil** and purified water source is fixedly connected with a first end of the second tee joint through a pipeline; and a second end

of the second tee joint is fixedly connected with a water inlet of the purified water tank through a pipeline. The water **injection** device is convenient to use, and a **pressure** transmitter, a **control** unit, a first electric **control valve** and a second electric **control valve** are matched, so that the aim of cooperating with the pump forward **pressure** of the joint **control** water **injection** pump is fulfilled, the water **injection** device has low investment cost, low energy consumption and simple automatic **control**, the water contamination of the water **injection** is avoided, and the energy-saving and emission-reducing effect of circulating, grading and utilizing the water resources is achieved.

43/115 © EPODOC / EPO

PN - [RU2011101015](#) A 20120720

PNFP - RU2496973 C2 20131027

PR - UA20100002583 20100309

AP - RU20110101015 20110112

DT - I

CT - || STSE (C2)
[RU2370641](#) C1 20091020 [] (TATNEFT IM V D SHASHINA AOOT [RU]);
[SU673725](#) A1 19790715 [] (VNII NEFTEGAZ [SU]);
[RU2290537](#) C1 20061227 [] (OAO TATNEFT IM V D SHASHINA [RU]);
[SU1423794](#) A2 19880915 [] (NEFTEGAZODOBYVAYUSHCHEE U ALME [SU], et al);
[RU4627U](#) U1 19970716 [];
[EP1075582](#) B1 20040825 [] (HYDRIL CO [US])

CTNP - || STSE (C2)
[] - БОЙКО В.С. Разработка и эксплуатация нефтяных месторождений. - М.: Недра, 1990, с.290-292.

PA - (C2)
G VYSSHEE UCHEBNOE ZAVEDENIE NATSIONAL NYJ GORNYJ UNI [UA]

TI - (C2)
BOREHOLE **OIL** EXTRACTION, AND **METHOD** FOR ITS IMPLEMENTATION

AB - (C2)
FIELD: **oil** and **gas** industry.SUBSTANCE: proposed **method** involves supply of working agent to formation of an **oil** deposit through **injection wells** and **oil flow** rate from formation to production **well**. According to the invention, variation change of working agent level is pre-set in a tubing string, working agent is supplied to the tubing string, back and forth movement of a plunger is provided in a borehole pump cylinder, **oil** is introduced from production **well** to the borehole pump cylinder through a suction **valve** at increase of volume of a suction-and-force cavity of borehole pump, working agent is supplied from the tubing string to the borehole pump cylinder at increase of volume of the suction-and-force cavity of the borehole pump, **oil** and working agent concentrated in the suction-and-force cavity of the borehole pump is displaced with the plunger through a delivery **valve** to an **oil** line. Working agent level is **controlled** in the tubing string and change of the **controlled** level is provided within the specified range by supplying the working agent to the tubing string.EFFECT: owing to **reducing** (up to full exclusion) of cases of plunger jamming in the borehole pump cylinder and break of a string of rods, considerable **reduction** of wear and tear of plunger and cylinder of the borehole pump.8 cl, 7 dwg

44/115 © EPODOC / EPO

- PN - [CN202441349U](#) U 20120919
- PR - CN2012267329U 20120228
- AP - CN2012267329U 20120228
- DT - I
- PA - BAIDA GUO
- TI - Automatic back **pressure** and overflow-releasing device of water **injection well** during power failure
- AB - The utility model discloses an automatic back **pressure** and overflow-releasing device of a water **injection well** during a power failure. The automatic back **pressure** and overflow-releasing device of the water **injection well** during the power failure belongs to an anti-freezing device of the water **injection well** for **oil** recovery in an **oil** field and aims at solving the problem of frozen blocking of the water **injection well** due to the power failure of a water **injection** pump. The technical scheme includes that a discharge pipe line is additionally disposed between a **pressure** gauge **valve** and a drop **valve** of a water **injection** pipeline through a tee-junction, a magnetic **valve** is arranged on the discharge pipe line, and the magnetic **valve** is **controlled** by a **control system**. The automatic back **pressure** and overflow-releasing device of the water **injection well** during the power failure has the advantages of being reasonable in structural design, greatly **reducing** working intensity and work load of workers, and guaranteeing smooth production of the **oil** field.

45/115 © EPODOC / EPO

- PN - [RU2450120](#) C1 20120510
- PR - RU20100151931 20101217
- AP - RU20100151931 20101217
- DT - I
- PA - TATNEFT IM V D SHASHINA AOOT [RU]
- TI - **SYSTEM TO PUMP WATER AND CLEAN BOTTOMHOLE FORMATION ZONE OF INJECTION WELL**
- AB - FIELD: **oil** and **gas** industry. ^ SUBSTANCE: **system** includes **wellhead** equipment communicated with a water conduit, which is connected to a pump, and a reservoir via appropriate stop valves. According to the invention, the pump is of a displacement type with a **controlled** drive and is arranged on the water conduit in a **wellhead** zone of a **well**. The pump inlet is communicated with the water conduit via an additional stop **valve**, and the outlet - with a reservoir via its stop **valve** and the **wellhead** equipment via its stop **valve**. Besides, the water conduit is equipped between the **wellhead** equipment and the additional stop **valve** with a bypass line that covers the pump and equipped with a stop and **control valve**. The reservoir stop **valve** and the stop and **control valve** are made as capable of opening during cleaning of the bottomhole formation zone by fluid drainage from the **injection well** and closing as water is **injected** along the water conduit with a pump via the **wellhead** equipment into the **well**. At the same time there is an opportunity to additionally **reduce pressure** at the **injection wellhead** due to a displacement pump and operation of additional stop valves and stop valves of the **wellhead** equipment oppositely to other stop valves. ^ EFFECT: increased

efficiency of device operation due to more intense cleaning of the bottomhole formation zone - removal of dirt from this zone. ^ 1 dwg

46/115 © EPODOC / EPO

PN - [MX2011002672](#) A 20110921

PR - FR20100051847 20100316

AP - MX20110002672 20110310

DT - I

CCI - [E21B43/16](#) ; [E21B43/26](#) ;
[E21B21/062](#)

PA - SPCM SA [FR]

TI - **METHOD FOR REDUCING THE INJECTION PRESSURE OF A POLYMER SOLUTION IN AN OIL WELL WITHOUT SHEAR DEGRADATION.**

AB - The **method** involves inserting a main displacement pump between an **injection** pump and an **oil well**, where the displacement pump is a gear pump. Speed of the displacement pump is **controlled** using Telma (RTM: electric brake), where the displacement pump is reversible. The brake is connected to an engine shaft, where speed of the displacement pump is **controlled** by a **valve** that is located in downstream of the displacement pump. Closing and opening processes of the displacement pump are managed according to **injection pressure** determined for the **well**..

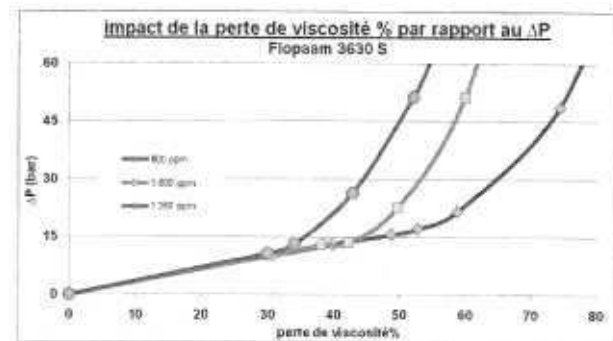


Figure 1

47/115 © EPODOC / EPO

PN - [CN202031575U](#) U 20111109

PR - CN2011251453U 20110301

AP - CN2011251453U 20110301

DT - I

PA - CHINA NAT OFFSHORE OIL CORP; CNOOC RES CT; UNIV SOUTHWEST PETROLEUM

TI - Testing device for units and components of intelligent **well**

AB - The utility model relates to a testing device for units and components of an intelligent **well**, which comprises a pressurizing device and a high-temperature and

high-**pressure** shaft, wherein the pressurizing device comprises a variable frequency motor, a pump, a one-way **valve**, a pilot type electromagnetic overflow **valve**, an **oil** supply device and an **oil injection** pipeline, one end of the **oil injection** pipeline is connected with an outlet of the pump, the other end of the **oil injection** pipeline leads into the shaft, and the one-way **valve** and the pilot type electromagnetic overflow **valve** are arranged on the **oil injection** pipeline; and the high-temperature and high-**pressure** shaft comprises a shaft body, an upper flange, a lower flange, a stop **valve**, a temperature/**pressure** sensor, a heating jacket and a plurality of testing pipe cables, the upper flange and the lower flange are sealed at the two ends of the shaft body, the stop **valve** and the temperature/**pressure** sensor are mounted on the upper flange, one end of each testing pipe cable in the shaft body is connected with a testing element, the other end of each testing pipe cable outside the shaft body is connected with a **control system** and the heating jacket is wrapped outside the shaft body. The testing device is adopted as a ground testing device for all the units and the components of an underground **system** of the intelligent **well**, can stimulate an underground temperature and **pressure** environment, and is used for testing the functional states of all the units and the components, so that the down-**well** risk is further **reduced**.

48/115 © EPODOC / EPO

- PN - [CN202001162U](#) U 20111005
- PR - CN20102665105U 20101207
- AP - CN20102665105U 20101207
- DT - I
- PA - WUXI OIL PUMP & NOZZLE INST OF CHINA NO 1 AUTOMOBILE GROUP CO LTD
- TI - **Oil-taking metering valve controlled** common-rail **oil** feed pump
- AB - An **oil** feed pump of an electronic-**control** high-**pressure** common-rail fuel **injection system** of a diesel engine is mainly characterized in that the **oil** feed pump adopts an **oil-taking metering valve** in the middle of the front side of the **oil** pump to **control** the quantity of supplied **oil**, and has the beneficial effects that the length of **oil-pressure oil** paths from an **oil** outlet of the **oil** feed pump to cylinder piston cavities is consistent, so that the uniformity of **oil** supply of each cylinder can be improved; an overflow **valve** is arranged at the front of the **oil-taking metering valve**, so that the fuel **oil pressure** from the **oil-taking metering valve** to the cylinder piston cavity can be stabilized; a tiny quantity hole is arranged at the front side of a pump body to be communicated with **oil** cavities at the front and at the rear of an **oil** pump quantity hole of the **oil** feed pump, thereby realizing the functions of stabilizing the **pressure** oscillation of the cylinder piston cavities and **reducing** the vacuum absorption and cavitation functions of plungers; and as an **oil-taking valve** of the **oil** feed pump adopts a ball **valve** structure, an **oil** outlet **valve** of the **oil** feed pump adopts a cone **valve** structure, and the two valves share a **valve** seat, so that the feed pump has a compact structure and a regular shape, thus being convenient for process and assembly. The **oil** feed pump is capable of simplifying structure and improving **oil** supply efficiency as **well** as the stability of common-rail **pressure**, and **reduces** the difficulty of processing key parts, thus being applicable to mass production.

49/115 © EPODOC / EPO

- PN - [CN102080523](#) A 20110601

PR - CN2011101446 20110106

AP - CN2011101446 20110106

DT - I

CT - || STSE (A)
[EP2022936](#) A1 20090211 [A] (SHELL INT RESEARCH [NL])
 [A] 1-2
 全文
[US4478280](#) A 19841023 [A] (HOPKINS DANIEL N [US], et al)
 [A] 1-2
 全文

CTNP - || STSE (A)
 [Y] 王史文等,
 "用物理化学辅助蒸汽吞吐技术改善超稠油开采效果", <<西安石油学院学报>>,
 (19991130), vol. 14, no. 6, PAGE 20 - 23
 [Y] 1-2
 20-23
 [Y] 陈辉,
 "特稠油化学复合吞吐工艺技术研究与应用", <<山东大学学报(工学版)>>,
 (20100430), vol. 40, no. 2, PAGE 113 - 119
 [Y] 1-2
 113-119

PA - CHINA PETROLEUM & CHEMICAL; XINJIANG EXPLORATION & DEV CT SHENGLI OILFIELD
 COMPANY OF SINOPEC

TI - Compound huff-puff **oil** recovery **method** by using steam and **oil**-soluble
 viscosity **reducer**

AB - The invention provides a compound huff-puff **oil** recovery **method** by using steam and
 an **oil**-soluble viscosity **reducer**. The **method** comprises the following steps: a.
 embedding of a steam **injection** pipe column: the structure of the pipe column is a
 uniform steam distribution pipe column which is sequentially provided with a uniform
 steam distribution **valve** and a compensator from the bottom to top, an **injection** and
 recovery integrated pump is connected with the upper part of the pipe column, an **oil**
 pipe is arranged on the pump, and a sub-critical steam **injection well** mouth is adopted;
 b. **injection** of the viscosity **reducer**: firstly the **oil** pipe is filled with the **oil** soluble
 viscosity **reducer**, then a casing **valve** is closed, and the **oil** soluble viscosity **reducer** is
 continuously **injected** into a **well** bore; c. steam **injection**: the steam is
 annularly **injected** via an **oil** jacket; d. **well** soaking: the **well** remains soaking for 2-7
 days after the steam is completely **injected**; e. open **flow**: when the **pressure** of the **well**
 mouth drops to 0.5MPa/day, open **flow** is **controlled** by an **oil** nozzle; and f. pumping
 startup: in the case of open **flow** up to the liquid quantity of 3t/d, the **injection** and
 recovery integrated pipe column is adopted for starting pumping.

50/115 © EPODOC / EPO

PN - [CN102080522](#) A 20110601

PR - CN2011101428 20110106

AP - CN2011101428 20110106

DT - I

- CT - || STSE (A)
[CN101255788](#) A 20080903 [A] (PETROLEUM EXPL CT OF SINOPEC S [CN])
 [A] 1-2
 全文
[US4733724](#) A 19880329 [A] (CARDENAS RICARDO L [US], et al)
 [A] 1-2
 全文
[US5027898](#) A 19910702 [A] (NAAE DOUGLAS G [US])
 [A] 1-2
 全文
- CTNP - || STSE (A)
 [Y] 吴祖景等,
 "氮气助排和降粘技术应用效果分析", <<商情(教育经济研究)>>, (20080531), no. 5,
 PAGE 378
 [Y] 1-2
 378
 [Y] 高永荣等,
 "超稠油氮气,溶剂辅助蒸汽吞吐开采技术研究", <<石油勘探与开发>>, (20030430),
 vol. 30, no. 2, PAGE 73 - 75
 [Y] 1-2
 73-75
- PA - CHINA PETROLEUM & CHEMICAL; XINJIANG EXPLORATION & DEV CT SHENGLI OILFIELD
 COMPANY OF SINOPEC
- TI - **Oil** extraction **method** for **oil** deposit of shallow-layer super heavy **oil**
- AB - The invention provides an **oil** extraction **method** for an **oil** deposit of shallow-layer super heavy **oil**, comprising the following steps: a. lowering a steam **injection** pipe column: ensuring that the pipe column structure is an even steam distribution pipe column provided with an even steam distribution **valve** and a compensator which are sequentially arranged from bottom to top, connecting the upper part of the pipe column with an integrated **injection** and extraction pump, installing an **oil** pipe on the pump, and installing a subcritical steam **injection well** mouth at the **well** mouth; b. **injecting** viscosity breaking agent: fully filling the **oil** pipe with **oil** soluble viscosity breaking agent, closing a casing pipe **valve**, and continuing to **inject** the **oil** soluble viscosity breaking agent into the **wellhole**; c. **injecting** N2 and steam: **injecting** steam through a casing-tubing annulus, simultaneously **injecting** nitrogen into the **oil well** through the **oil** pipe, and adjusting the nitrogen **injecting** speed to ensure that the nitrogen is evenly **injected** in the whole steam **injecting** process; d. soaking: after the steam and the nitrogen are **injected**, soaking for 2-7 days; e. opening the **well** for gushing: when the **pressure** of the **well** mouth is **reduced** to 0.5MPa/day, **controlling** the process of opening the **well** for gushing by means of an **oil** nozzle; and f. starting to pump: starting to pump by means of an integrated pipe column when the **oil well** can produce an open-**flow** liquid amount of 3t/d.

PN - [EP2366868](#) A1 20110921

PNFP - [EP2366868](#) B1 20130417

PR - [FR20100051847](#) 20100316

AP - [EP20110305180](#) 20110222

DT - *; Rep

CT - || STSE (A1)
[US2009242201](#) A1 20091001
 [YD] (VAN BEURDEN JORGEN [CA], et al)
 [YD] 1-3,7-9
 * paragraph [0100]; figure 1 *
 * the whole document *;
[US4510397](#) A 19850409
 [Y] (SCHROEDER JR DONALD E [US])
 [Y] 1-3,7-9
 * abstract *
 * claim 3 *
 * the whole document *;
[CA1209466](#) A 19860812
 [A] (MARATHON OIL CO)
 [A] 1,3
 * figures 1-4; claims 5,22 *
 * the whole document *;
[WO2008081048](#) A2 20080710
 [A] (SPCM SA [FR], et al)
 [A] 1
 * figure 1 *;
[US4204574](#) A 19800527
 [A] (STALDER JOHN L [US])
 [A] 1
 * the whole document *
 * abstract *

CCI - [E21B43/16](#) ; [E21B43/26](#) ;
[E21B21/062](#)

PA - (A1 B1)
 SPCM SA [FR]

TI - (A1 B1)
Method for **reducing**
 the **injection pressure** of a
 polymer solution in an **oil well**
 without shear degradation

AB - (A1)
 The **method** involves inserting a
 main displacement pump
 between an **injection** pump and
 an **oil well**, where the

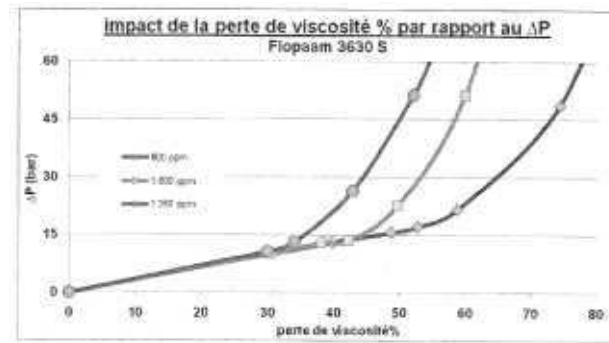


Figure 1

displacement pump is a gear pump. Speed of the displacement pump is **controlled** using Telma (RTM: electric brake), where the displacement pump is reversible. The brake is connected to an engine shaft, where speed of the displacement pump is **controlled** by a **valve** that is located in downstream of the displacement pump. Closing and opening processes of the displacement pump are managed according to **injection pressure** determined for the **well**.

52/115 © EPODOC / EPO

- PN - [JP2010279867](#) A 20101216
- PNFP - JP5460132B B2 20140402
- PR - JP20090133587 20090603
- AP - JP20090133587 20090603
- DT - I
- CT - || STSE (A)
[JPH0215588Y](#) Y2 19900426 [];
[JPH0217264U](#) U 19900205 [];
[JP2006308105](#) A 20061109 [] (MUSASHI ENG KK);
[JP2002361146](#) A 20021217 [] (FUJI PHOTO FILM CO LTD)
- CCI - [B05C11/1034](#) ; [H01L24/27](#) ; [H01L24/743](#) ; [H01L24/83](#)
- CCA - [B05D1/26](#) ; [H01L2224/838](#) ; [H01L2924/01005](#) ; [H01L2924/01006](#) ; [H01L2924/01019](#) ;
[H01L2924/01033](#) ; [H01L2924/01043](#) ; [H01L2924/01082](#) ; [Y10T137/3127](#) ;
[Y10T137/3118](#)
- FI - B05C5/00&101; B05D1/26&Z; B05D3/00&B
- FT - 4D075/AC06; 4D075/AC84; 4D075/AC88; 4D075/AC95; 4D075/CA22; 4D075/EA35;
4F041/AA06; 4F041/AB01; 4F041/BA01; 4F041/BA34
- PA - (A)
MUSASHI ENG KK
- TI - (A)
METHOD OF MAKING ESTIMATED DISCHARGING OF LIQUID AND DEVICE USING
THIS **METHOD**
- AB - (A)
PROBLEM TO BE SOLVED: To provide a **method** of making estimated discharging of liquid which can make a highly precise distribution and divide **injection** of a liquid material, compared with a conventional **method**, as **well** as a device using this **method**.
- SOLUTION: This **method** of making estimated discharging of liquid employs a device equipped with a decompression **valve** which **reduces** the **pressure** of a compressed **gas**

to be supplied from a compressed air source, a discharge **valve** which **controls** the passing amount of a **gas** decompressed by the decompression **valve**, a liquid storage container which discharges a liquid from a nozzle by the pressing of the **gas** supplied through the discharge **valve**, and a buffer tank which is arranged between the decompression **valve** and the discharge **valve** and has a larger volume than the volume of the liquid storage container. In addition, the fluid resistance of a **flow** path which makes the buffer tank communicate with the storage container, is set larger than the fluid resistance of a **flow** path which makes the buffer tank communicate with the decompression **valve**. Consequently, the **pressure** deterioration, of the **flow** path for supplying the compressed air to the liquid storage container, which is generated when the decompression **valve** is actuated, can be lessened. Also, the device using this **method** is provided.

- COPYRIGHT: (C)2011,JPO&INPIT

53/115 © EPODOC / EPO

PN - [CN201705248U](#) U 20110112

PR - CN20102199706U 20100521

AP - CN20102199706U 20100521

DT - I

PA - SICHUAN HONGHUA PET EQUIPMENT

TI - Continuous pipe **injection** head **control** device

AB - The utility model relates to a continuous pipe **injection** head **control** device, which comprises a two-way speed-adjusting **pressure**-limiting device, a parking and driving device, a two-way balancing device and a washing device. The two-way speed-adjusting **pressure**-limiting device comprises a variable frequency motor and a two-way variable displacement pump. The parking and driving device comprises a solenoid **valve** and a brake. The two-way balancing device comprises a first balancing **valve** and a second **valve**. The variable frequency motor is sequentially connected with the two-way variable displacement pump, the solenoid **valve**, the brake and an **injection** head motor. The **injection** head motor is respectively connected with the first balancing **valve** and the second balancing **valve**. The first balancing **valve** and the second balancing **valve** are respectively connected with the two-way variable displacement pump. A connecting pipeline between hydraulic fluid ports A of the first balancing **valve** and the second balancing **valve** as **well** as the two-way variable displacement pump forms two main **oil** lines of the **system**. The variable frequency motor is applied to the **injection** head hydraulic **system**, and the **control** manner of "variable frequency motor + variable displacement pump+ constant displacement motor" is adopted to realize mechanical-electrical integration **control**, thereby improving power source and **system** efficiency, **reducing** energy loss and optimizing working condition **control** and **system** reliability.

54/115 © EPODOC / EPO

PN - [CN201437720U](#) U 20100414

PR - CN20092107129U 20090407

AP - CN20092107129U 20090407

DT - I

PA - WAN AO PU BEIJING PETROLEUM ENGINEERING TECHNOLOGY DEV RES INST CO LTD

TI - Proportional- **control injecting system**

AB - The utility model discloses a proportional-**control injecting system**, which comprises a supercharge pump, wherein the supercharge pump is provided with a plurality of pump heads, and each pump head correspond one **injection well**; each pump head is provided with a **flow**-rate adjusting mechanism for **controlling** the **flow** rate of chemical agent solution, each pump head is independently communicated with a high-**pressure valve** assembly pipeline for conveying and monitoring the state of the chemical agent solution, the output end of the high-**pressure valve** assembly pipeline is connected with a high-**pressure** water pipeline, the output end port of the high-**pressure valve** assembly pipeline is communicated with a static mixer, the chemical agent solution is diluted by the water according to a setup proportion, and the diluted solution is **injected** into the **injection well** after being further and uniformly mixed inside the static mixer. The adjustment of the **flow** rate of the chemical agent solution is directly completed through the output of the supercharge pump, so the procedure of the original one-pump multi-**well** craftwork that the chemical agent solution is adjusted through a **valve** so as to realize the distribution of the **flow** rate can be canceled, the one-pump multi-**well** craftwork is simplified, the investment for the **oil** field chemical driving field can be saved, and the loss of the viscosity of the chemical agent solution at the **injection** link can be **reduced**.

55/115 © EPODOC / EPO

PN - [CN101618255](#) A 20100106

PNFP - CN101618255B B 20111109

PR - CN20081138002 20080630

AP - CN20081138002 20080630

DT - I

PA - (A B)
YANZHOU COAL MINING CO LTD

TI - (A B)
Mine carbon dioxide fire prevention and extinguishment technology and device therefor

AB - (A)
A mine carbon dioxide fire prevention and extinguishment technology and a device therefor are disclosed; in virtue of **pressure** generated after the vaporization of liquid CO₂ is **injected** into an underground fire zone through a pipeline and the CO₂ is used for **reducing** temperature and inerting to realize fire prevention and extinguishment. The **system** consists of a liquid CO₂ tank car 1, a carburettor 4, an air storage tank 3, an underground **gas** pipe as **well** as **flow**, **pressure** and temperature **control** components or devices for liquid inlet and air outlet. In operation, by adjusting a liquid inlet **control valve** F1, an air outlet **control valve** F2, a **pressure** maintaining **valve** FW and the like, **pressure**, **flow** and temperature of CO₂ liquid inlet and CO₂ air outlet meet the requirements, thus avoiding forming ice barrier. The fire prevention and extinguishment device consists of the carburettor 4, the air storage tank 3, a **control** box, a concentrated display cabinet and the like. The invention solves the problems of the vaporization of liquid CO₂ and ice barrier, the fire and extinguishment effect is good, the equipment investment is small, the usage is convenient, and the economic benefit is considerable. The invention is an efficient and applicable fire prevention and

extinguishment technology, which opens up a new approach for preventing from natural ignition of gob and fire hazard of tunnel in coal mines.

- (B)

A mine carbon dioxide fire prevention and extinguishment technology and a device are disclosed. By means of **pressure** generated after the vaporization of liquid CO₂, the liquid CO₂ is **injected** into an underground fire zone through a pipeline and the CO₂ is used for **reducing** temperature and inerting to realize fire prevention and extinguishment. The **system** consists of a liquid CO₂ tank car 1, a carburettor 4, an air storage tank 3, an underground **gas** pipe as **well** as **flow**, **pressure** and temperature **control** components or devices for liquid inlet and air outlet. In operation, by adjusting a liquid inlet **control valve** F1, an air outlet **control valve** F2, a **pressure** maintaining **valve** FW and the like, **pressure**, **flow** and temperature of CO₂ liquid inlet and CO₂ air outlet meet the requirements, thus avoiding forming ice barrier. The fire prevention and extinguishment device consists of the carburettor 4, the air storage tank 3, a **control** box, a concentrated display cabinet and the like. The invention solves the problems of the vaporization of liquid CO₂ and ice barrier, the fire and extinguishment effect is good, the equipment investment is small, the usage is convenient, and the economic benefit is considerable. The invention is an efficient and applicable fire prevention and extinguishment technology, which opens up a new approach for preventing from natural ignition of gob and fire hazard of tunnel in coal mines.

PN - [GB2463140](#) A 20100310

PNFP - GB2463140 B 20101208

PR - US20070691877
20070327; GB20080001717
20080131

AP - GB20090014527 20080131

DT - **

CT - (A B)
[US5996690](#) A []; [US6550535](#) B1
[];
[WO9837307](#) A1 []

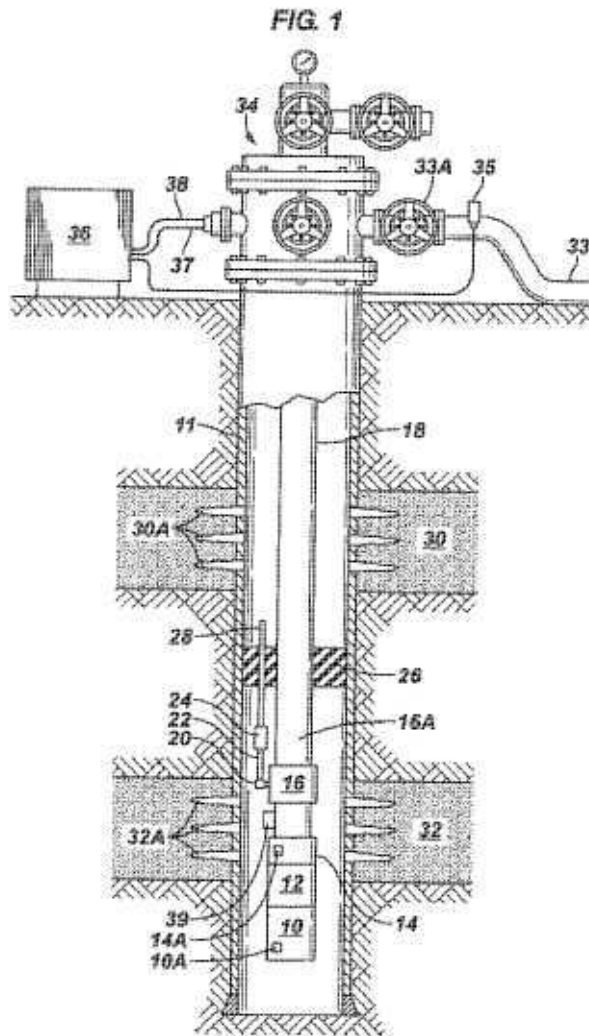
CCI - [E21B43/128](#) ; [E21B43/385](#)

CNOI - (A B)
[E21B43/12](#) ; [E21B43/121](#) ;
[E21B43/38](#) ; [E21B43/385](#)

PA - (A B)
SCHLUMBERGER HOLDINGS [VG]

TI - (A)
A **method** of operating
a **downhole oil** water separator
- (B)
Control of operating parameters
of a **downhole oil/water**
separation **system**

AB - (A)
A **method** of operating
a **downhole oil** water separator
16 and electric submersible
pump 14 in a **wellbore**
comprises measuring a
parameter related to presence
of **oil** in a water outlet 22 of the
separator, and **reducing** the
amount of water **flow** from a
water outlet of the separator to
an **injection** formation if the
measured **oil** parameter
indicates presence of **oil** in the
separated water. The amount of
water **flow** may be **reduced**
using a **valve** 24. The **method** may
further comprise measuring a
parameter related to the
presence of solids in an **oil** outlet
16A of the separator
and **reducing** the operating rate
of the pump.



57/115 © EPODOC / EPO

PN - [CN101519957](#) A 20090902

PNFP - CN101519957B B 20120425

PR - CN2009181454 20090407

AP - CN2009181454 20090407

DT - I

PA - (A)

WANOPU BEIJING OIL ENGINEERING

- (B)

DAQING DAFENG OILFIELD TECHNOLOGY CO LTD; NORTH WINNER BEIJING TECHNOLOGY DEV CO LTD

TI - (A B)

Proportion **regulating** and **injecting system**

AB - (A)

The intention discloses a proportion **regulating** and **injecting system** which comprises a **pressure** pump, a plurality of pump heads are arranged on the **pressure** pump, each pump head corresponds to an **injection well**, is provided with a flux **regulating** mechanism which can **control** the flux of chemical agent solution, is independently communicated with a high- **pressure valve** group pipeline which can transport and monitor the state of the chemical agent solution, the output end of the high-**pressure valve** group pipeline is connected with a high-**pressure** water pipeline, and an output port of the high-**pressure valve** group pipeline is communicated with a static mixer; the chemical agent solution is diluted by water according to a set proportion; after diluent is further evenly mixed in the static mixer, the diluent is **injected** into an **injection well**. The invention directly completes the **flow regulation** of the chemical agent solution through the output of the **pressure** head, cancels a link that the chemical agent solution is **regulated** by valves to realize the **flow** distribution in the original one-pump multiple-**well** technology, simplifies the one-pump multiple-**well** technology, saves oil-field chemical area ground investment and **reduces** viscosity loose of the chemical agent solution of the **injection** link.

- (B)

The intention discloses a proportion **regulating** and **injecting system** which comprises a **pressure** pump, a plurality of pump heads are arranged on the **pressure** pump, each pump head corresponds to an **injection well**, is provided with a flux **regulating** mechanism which can **control** the flux of chemical agent solution, is independently communicated with a high-**pressure valve** group pipeline which can transport and monitor the state of the chemical agent solution, the output end of the high-**pressure valve** group pipeline is connected with a high-**pressure** water pipeline, and an output port of the high-**pressure valve** group pipeline is communicated with a static mixer; the chemical agent solution is diluted by water according to a set proportion; after diluent is further evenly mixed in the static mixer, the diluent is **injected** into an **injection well**. The invention directly completes the **flow regulation** of the chemical agent solution through the output of the **pressure** head, cancels a link that the chemical agent solution is **regulated** by valves to realize the **flow** distribution in the original one-pump multiple-**well** technology, simplifies the one-pump multiple-**well** technology, saves oil-field chemical area ground investment and **reduces** viscosity loose of the chemical agent solution of the **injection** link.

mixer; the chemical agent solution is diluted by water according to a set proportion; after diluent is further evenly mixed in the static mixer, sure **valve** group pipeline is communicated with a static mixer; the chemical agent solution is diluted by water according to a set proportion; after diluent is further evenly mixed in the static mixer, the diluent is **injected** into an **injection well**. The invention directly completes the **flow regulation** of the chemical agent solution through the output of the **pressure** head, cancels a link that the chemical agent solution is **injected** into an **injection well**. The invention directly completes the **flow regulation** of the chemical agent solution through the output of the **pressure** head, cancels a link that the chemical agent solution is **regulated** by valves to realize the **flow** distribution in the original one-pump multiple-**well** technology, simplifies the one-pump multiple-**well** technology, saves **oil-field** chemical agent solution is **regulated** by valves to realize the **flow** distribution in the original one-pump multiple-**well** technology, simplifies the one-pump multiple-**well** technology, saves **oil-field** chemical area ground investment and **reduces** viscosity loose of the chemical agent solution of the **injection** link. **cal** area ground investment and **reduces** viscosity loose of the chemical agent solution of the **injection** link.

58/115 © EPODOC / EPO

PN - [RU2007146181](#) A 20090620

PNFP - RU2438034 C2 20111227

PR - EP20060425833 20061212

AP - RU20070146181 20071211

DT - I

CCI - [F02M21/0239](#) ; [F02D19/022](#) ; [G05D16/2093](#) ; [F02M21/0233](#)

CCA - [Y02T10/32](#) ; [F02M21/0206](#) ; [F02M21/0209](#) ; [F02D2041/2027](#)

PA - (C2)
K R F SOCHIETA KONSORTILE PER ATSIONI [IT]

TI - (C2)
ELECTRONIC **GAS** SUPPLY **PRESSURE CONTROL**, NAMELY OF METHANE OR HYDROGEN, TO INTERNAL COMBUSTION ENGINE, AND **GAS** SUPPLY **SYSTEM** CONTAINING SUCH DEVICE

AB - (C2)
FIELD: engines and pumps. ^ SUBSTANCE: **gas** supply **system**, namely for supply of methane or hydrogen, to internal combustion engine includes multiple **injectors** with electromagnetic **control**, which are connected to various engine cylinders, distributing manifold or **gas** ramp, which are connected to **injectors**; **gas** supply tank to distributing manifold, in which compressed **gas** is accumulated, and **pressure reducing valve**. Electromagnetic **control valve** includes inlet hole connected to fuel tank, outlet hole connected to auxiliary inlet hole of **pressure-reducing valve**, as **well** as to distributing manifold; movable armature **control** solenoid that **controls** the connection between inlet holes and outlet hole of electromagnetic **control valve** to provide the specified **gas pressure reduction** in the channel from inlet hole to outlet hole of electromagnetic **control valve**. In addition, **gas** supply **system** includes electronic solenoid **control** device of electromagnetic **control valve**. **Pressure reducing valve** and electromagnetic **control valve** are combined in housing of common electronic **pressure control**. In the housing there is inlet hole for **gas** supplied from fuel tank; outlet hole for **gas** that is supplied to distributing manifold or **gas** ramp; connecting channel between inlet hole and **pressure reducing valve**; connecting channel between inlet hole

and electromagnetic **control valve**; connecting channel between electromagnetic **control valve** and **pressure reducing valve**; connecting channel between electromagnetic **control valve** and outlet hole, and connecting channel between **pressure reducing valve** and outlet hole. In addition, the device includes electronic solenoid **control** module of electromagnetic **control valve**. Electronic **pressure control** for **gas supply system**, namely for supply of methane or hydrogen, to internal combustion engine has housing. In housing there combined is **pressure reducing valve** of **gas** supplied from fuel tank to the value required for **gas** supply to distributing manifold or **gas** ramp, and electromagnetic **control valve** having the possibility of generating **pressure control** signal on which **pressure reduction** degree depends, which is performed by means of **pressure reducing valve**, as well as connecting channels between the above valves and between each of the above valves and inlet hole and outlet hole of the device. In addition, the device includes electronic **control** module for **control** of electromagnetic **control valve**. ^ EFFECT: invention allows improving the proposed **system**, namely owing to simplifying and improving its components. ^ 30 cl, 15 dwg

59/115 © EPODOC / EPO

PN - [KR100902958B](#) B1 20090615
 PR - KR20080061388 20080627
 AP - KR20080061388 20080627
 DT - I
 CNOI - [F02D41/0235](#) ; [F02D19/08](#) ; [F02D41/0025](#)
 CNOA - [Y02T10/36](#) ; [Y02T10/32](#)
 PA - TEMS CO LTD [KR]
 TI - EMISSION **REDUCTION SYSTEM** AND **METHOD OF DIESEL GAS DUAL FUEL SYSTEM**
 AB - An exhaust **gas control system** for a diesel-**gas** fuel mixing combustion engine and a **control method** thereof are provided to increase the combustion efficiency of the engine and to improve the performance of exhaust **gas** and to decrease the air volume in the light loaded and heavy loaded section as **well**. An exhaust **gas control system** for a diesel-**gas** fuel mixing combustion engine comprises an air intake passage(31) and a vent passage(32); a fuel mixing combustion **controller** which **controls** the **injection** rate and **injection** timing of the diesel fuel and **gas** fuel; a **gas injector** which supplies **gas** fuel to the cylinder; a diesel **injector** which supplies diesel fuel to the cylinder; a turbocharger(2) which is connected to both air intake passage and vent passage; an intake air **pressure** sensor and an intake air temperature sensor which are equipped in the air intake passage; a broadband oxygen sensor detecting air-fuel ratio; a pedal location sensor measuring a pedal opening degree; an air bypass **valve**(21) which is equipped in an air passage(23); and an air bypass **valve** position sensor(22).

60/115 © EPODOC / EPO

PN - [CA2619915](#) A1 20090814
 PNFP - CA2619915 C 20171128
 PR - CA20082619915 20080214
 AP - CA20082619915 20080214
 DT - *; Rep

CCI	- F02B33/32 ; F01L1/0532 ; F02B37/04 ; F02B39/10 ; F01L1/46 ; F02B67/10
CCA	- Y02T10/144 ; F02B41/10 ; F01L2001/0535 ; F01L2001/054 ; F02B2075/025 ; F02B2275/34
PA	- (A1 C) PEROVIC SRDJAN [CA]
TI	- (A1 C) TWO STROKE ENGINE WITH REGULAR LUBRICATION SYSTEM
AB	- (A1) This is a proposal for a two-stroke engine that incorporates advantages of both the two-stroke and four-stroke types of engines. The engine is lubricated exactly like a four-stroke engine; it has piston rings that lubricate the piston and the cylinder, i.e. the oil control ring, as well as all the customary lubricating parts such as the oil pan with the oil pump and the oil distribution system . The engine uses two camshafts, one for the intake valve and the other for the exhaust valve . The engine has a compressor, powered by the engine battery to compress ambient air before it enters into the combustion chamber. Additionally, the engine has an exhaust powered turbine connected to an alternator, which provides additional power for the engine battery. The engine is equipped with one or plurality of fuel- injection nozzles. The piston is of the two step type, which reduces friction between the piston and the cylinder. The operation of the engine is control led by a computer, the Engine Control Unit (ECU). - (C) The invention is a two-stroke engine that incorporates advantages of both the two-stroke and four-stroke types of engines. The crankcase is sealed and uses an oil pump to lubricate the piston, connecting rod and crankshaft. The combustion air does not flow through the crankcase. Instead, the engine uses two camshafts, one for the intake valve located on the cylinder head and the other for the exhaust valve located on the side of the cylinder. The engine has a compressor, powered by the engine battery to compress ambient air before it enters into the combustion chamber. Additionally, the engine has an exhaust powered turbine connected to an alternator, which provides additional power for the engine battery. The engine is equipped with one or plurality of fuel- injection nozzles. The piston is of the two step type, which reduces friction between the piston and the cylinder.

61/115 © EPODOC / EPO

PN	- CN101476456 A 20090708
PNFP	- CN101476456B B 20120425
PR	- CN2008155680 20080104
AP	- CN2008155680 20080104
DT	- I
PA	- (A) ANTON OILFIELD SERV GROUP LTD [CN] - (B) ANTON OILFIELD SERV GROUP LTD
TI	- (A B) Filling water- control sieve tube and its laying method
AB	- (A)

The invention relates to a filling water **controlling** sieve tube and a distributing **method** thereof. The filling water **controlling** sieve tube comprises a base tube which is provided with at least one filter sleeve; a stream guide layer which makes fluid **flow** axially is formed between the inner surface of the filter sleeve and the outer surface of the base tube, the base tube positioned in the stream guide layer is provided with at least one **flow control** device, and the base tube is also provided with a filling **valve** which is opened when filling solid particles and is closed after filling the solid particles. The distributing **method** comprises the following: distributing the filling water **controlling** sieve tube at the production position of an **oil gas well**; filling the solid particles between the filling water **controlling** sieve tube and the **well** wall; and closing the filling **valve** on the filling water **controlling** sieve tube. The sieve tube has a simple structure and simple construction process, can be widely applied to **oil gas** field production and an **injection well**, particularly the production of a horizontal **well**, effectively delay or **reduce** a large amount of water outlet of the **oil gas well**, not only improve the daily output of the **oil gas well**, but also save labor force and financial resources, and **reduce** environment pollution.

- (B)

The invention relates to a filling water **controlling** sieve tube and a distributing **method** thereof. The filling water **controlling** sieve tube comprises a base tube which is provided with at least one filter sleeve; a stream guide layer which makes fluid **flow** axially is formed between the inner surface of the filter sleeve and the outer surface of the base tube, the base tube positioned in the stream guide layer is provided with at least one **flow control** device, and the base tube is also provided with a filling **valve** which is opened when filling solid particles and is closed after filling the solid particles. The distributing **method** comprises the following: distributing the filling water **controlling** sieve tube at the production position of an **oil gas well**; filling the solid particles between the filling water **controlling** sieve tube and the **well** wall; and closing the filling **valve** on the filling water **controlling** sieve tube. The sieve tube has a simple structure and simple construction process, can be widely applied to **oil gas** field production and an **injection well**, particularly the production of a horizontal **well**, effectively delay or **reduce** a large amount of water outlet of the **oil gas well**, not only improve the daily output of the **oil gas well**, but also save labor force and financial resources, and **reduce** environment pollution.

62/115 © EPODOC / EPO

PN - [CN101476455](#) A 20090708

PNFP - CN101476455B B 20120425

PR - CN2008155679 20080104

AP - CN2008155679 20080104

DT - I

PA - (A)
ANTON OILFIELD SERV GROUP LTD [CN]
- (B)
ANTON OILFIELD SERV GROUP LTD

TI - (A B)
Filling water- **control** sieve tube and its laying **method**

AB - (A B)

The invention relates to a filling water **controlling** sieve tube and a distributing **method** thereof. The filling water **controlling** sieve tube comprises a base tube which is provided with at least one filter sleeve; a stream guide layer which makes fluid **flow** axially is formed between the inner surface of the filter sleeve and the outer surface of the base tube, and the base tube is also provided with a filling water **controlling valve** which is set into a large pore canal state with large **flow** passing ability when filling solid particles and a small pore canal state with **flow control** capability after filling the solid particles. The distributing **method** comprises the following: distributing the filling water **controlling** sieve tube at the production position of an **oil gas well**; filling the solid particles between the filling water **controlling** sieve tube and the **well** wall; and setting the filling water **controlling valve** on the filling water **controlling** sieve tube into the small pore canal state. The sieve tube has a simple structure and simple construction process, can be widely applied to **oil gas** field production and an **injection well**, particularly a horizontal **well**, effectively delay or **reduce** a large amount of water outlet of the **oil gas well**, improve the daily output of the **oil gas well**, save labor force and financial resources, and **reduce** environment pollution.

63/115 © EPODOC / EPO

- PN - [CN101423116](#) A 20090506
- PR - CN20081226310 20081112
- AP - CN20081226310 20081112
- DT - I
- PA - UNIV BEI HANG [CN]
- TI - High incidence dissymmetry eddy single-hole site micro-blowing disturbance active **control method** and device
- AB - The invention relates to a high-incidence asymmetric vortices single-hole micro-blowing positive **control method** and a corresponding apparatus. The **method** includes the following steps: step 1. the apparatus is manufactured and prepared **well**; step 2. the model state and air supply are **regulated**; and step 3. the lateral force **control** is carried out. The apparatus comprises a rotary blowing head, a micro-blowing assembly and an air-supply and **flow regulating** device which is formed by a nitrogen bottle, a **pressure-reducing valve**, a **flow** meter, a **pressure** meter, a **gas** pipeline and a single-hole micro-blowing model. The **pressure** of the high-**pressure gas** in the nitrogen bottle is **reduced** to 0.4 to 0.6 MPa through the **pressure-reducing valve** and then the **gas** is **injected** through the **flow** meter, the **pressure** meter and the **gas** pipeline into the rotary blowing head of the single-hole micro-blowing model; then the **control gas** is blown to a **flow** field through a stainless-steel pipe, a guide vent and a blowing vent so as to **control** the asymmetric vortices and the blown **flow** is **controlled by regulating** the **flow** meter. The blowing vent on the rotary blowing head is arranged on a position which is away from the head tip of the model by 3mm; and the smaller the distance between the blowing vent and the head tip is, the better the effect is.

64/115 © EPODOC / EPO

- PN - [CN101251006](#) A 20080827
- PR - CN2007151007 20071227
- AP - CN2007151007 20071227

- DT - I
- PA - SICHUAN HONGHUA PETROLEUM EQUI [CN]
- TI - Intelligentized **control** apparatus for coiled tubing **injection** head gripper mechanism
- AB - The invention relates to an intelligent **control** device for a continuous **oil** pipe **injection** head clamping device, belonging to the petroleum and **gas** drilling equipment manufacturing technical field. The **control** device for precisely **controlling** the continuous **oil** pipe clamping device by adoption of a PLC **system** and a proportional **pressure-reducing valve** realizes intelligent **control** of the continuous **oil** pipe clamping device; clamping intelligent **control** of a continuous **oil** pipe is mainly based on a depth signal, a total weight signal and a clamping **oil** cylinder **pressure** signal which are detected by a sensor; the PLC **system** processes the signals and **controls** the proportional **pressure-reducing valve** to automatically adjust the **pressure** of a clamping **oil** cylinder and prevent slippage of the continuous **oil** pipe. Moreover, judgment can be made whether the conditions of pick-up clamping or **downhole** resistance of the continuous **oil** pipe exist or not through comparison of the **downhole** depth and the total weight signal by the PLC **system**, and the pick-up speed and the **downhole** speed or intelligent **control** functions such as protective braking of a driving **system** and so on are **controlled**, thereby the safety of **downhole** equipment is guaranteed.

PN - [US5707214](#) A 19980113

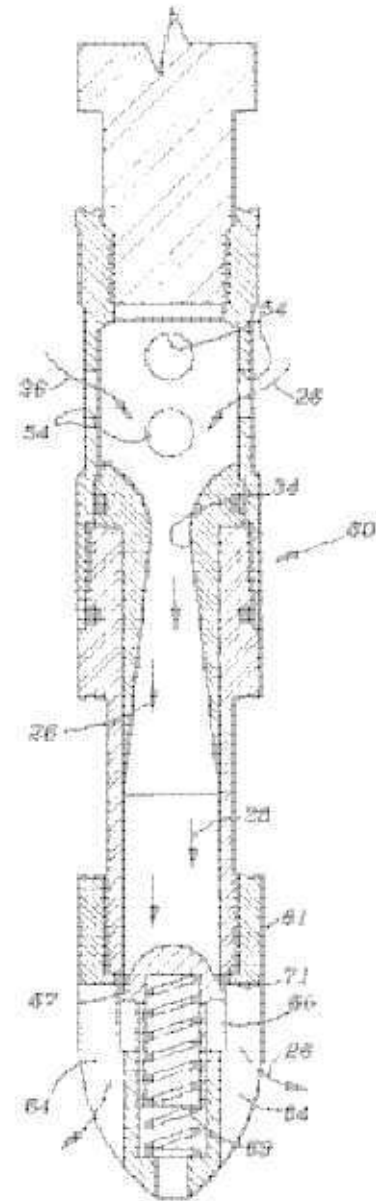
PR - US19960723169
19960927; US19940301661
19940907; US19950434037
19950502; US19940269888
19940701

AP - US19960723169 19960927

DT - *

CT - [US233499](#) A []; [US814601](#) A [];
[US1602190](#) A []; [US1856872](#) A [];
[US2008172](#) A []; [US2323893](#) A [];
[US2716509](#) A []; [US2717648](#) A [];
[US3324803](#) A []; [US3523744](#) A [];
[US3672790](#) A []; [US3784325](#) A [];
[US3884299](#) A []; [US4087207](#) A [];
[US4111608](#) A []; [US4251191](#) A [];
[US4397612](#) A []; [US4441861](#) A [];
[US4573877](#) A []; [US4603735](#) A [];
[US4792284](#) A []; [US5066198](#) A [];
[US5107441](#) A []

CTNP - [] Gruppig, A. W.; Luca, C. W.
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Jul.
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pp. 186 191
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297 303

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[] Clegg, J.D.; Gault, R.; Lea, J.; Winkler, H., Specialists Share Experience With Artificial Lift Methods , Journal of Petroleum Technology, May 1995, pp. 364 393

[] Gas Lift Valves , Teledyne Merla, May 1983, pp. 8 9

[] Fundamentals of Engineering Thermodynamics , Moran and

Shapiro, 1988, pp. 414 415, Figure 9.30

- | | |
|-----|---|
| CCI | - <u>E21B43/123</u> |
| PA | - FLUID FLOW ENGINEERING COMPANY [US] |
| TI | - Nozzle-venturi gas lift flow control device and method for improving production rate, lift efficiency, and stability of gas lift wells |
| AB | - A gas flow control device for injecting gas into a production string for |

66/115 © EPODOC / EPO

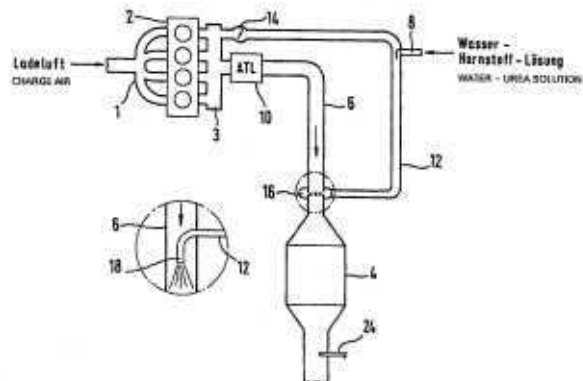
PN - [US6843966](#) B1 20050118

PR - DE1998155384
 19981201; WO1999DE02265
 19990723

AP - US20000601365 20001103

DT - **

CT - || STSE (B1)
 [US5209062](#) A 19930511 [
] (VOLLENWEIDER JAKOB [CH])
 [US5606856](#) A 19970304 [
] (LINDER ERNST [DE], et al)
 [US5943858](#) A 19990831 [
] (HOFMANN LOTHAR [DE], et al)
 [US6122909](#) A 20000926 [
] (MURPHY OLIVER J [US], et al)
 [EP0381236](#) A1 19900808 [
] (KOBAYASHI MOTONOBU, et al)
 [JPH05115749](#) A 19930514 [



	]	(TAKAMI AKIHIDE, et al)
CCI	-	B01D53/9431 ; F01N3/2066 ; F02B37/18
CCA	-	Y02T10/144 ; F01N2610/02 ; Y02T10/24
PA	-	BOSCH GMBH ROBERT [DE]
TI	-	Apparatus for post-treating exhaust gases of an internal combustion engine
AB	-	An apparatus for post-treating exhaust gases of an internal combustion engine, in particular a Diesel engine, having a reduction catalytic converter serving to reduce NOx ingredients of the exhaust gases, to which reduction catalytic converter an exhaust pipe leads, and having a reducing agent supply device and a device that generates a pressure difference in the exhaust gas . In the apparatus, the supply of reducing agent is effected via a bypass line, which carries a portion of the exhaust gases past the device that generates the pressure difference in the exhaust gas . The apparatus can use either ammonia or a water and urea solution, or hydrocarbons of the fuel as well as CO as a reducing agent.
TXT	-	Inject reducing agent (ammonia- urea-fuel) in exhaust bypass system of turbocharger turbine; control valve ; NOx reducing catalyst (SCR); crack ctalyst

PN - [US2008104945](#) A1 20080508

PNFP - [US7654079](#) B2 20100202

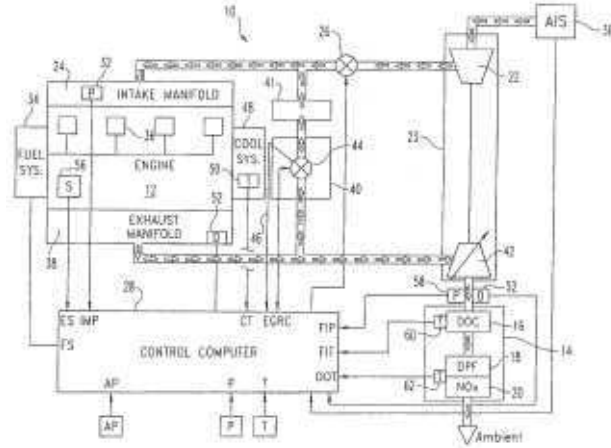
PR - [US20060593722](#) 20061107

AP - [US20060593722](#) 20061107

DT - *; Rep

CT - || STSE (B2)
[US5992142](#) A 19991130 [] (POTT EKKEHARD [DE])
[US6209515](#) B1 20010403 [] (GOTOH MASATO [JP], et al)
[US6240723](#) B1 20010605 [] (ITO TAKEKAZU [JP], et al)
[US6422004](#) B1 20020723 [] (TAKAMI AKIHIDE [JP], et al)
[US6581372](#) B2 20030624 [] (SASAKI SHIZUO [JP], et al)
[US6907862](#) B2 20050621 [] (KITAHARA YASUHISA [JP])

- || R141 (A1)
[US2003000205](#) A1 [];
[US6502387](#) B1 [];
[US6990799](#) B2 [];
[US5600947](#) A [];
[US6185935](#) B1 [];
[US2003037541](#) A1 [];
[US6513319](#) B2 [];
[US6513322](#) B2 [];
[US6688101](#) B2 [];
[US5878567](#) A [];
[US6202406](#) B1 [];
[US6360530](#) B1 [];
[US2003056497](#) A1 [];
[US2003056499](#) A1 [];
[US6871492](#) B2 [];
[US5743084](#) A [];
[US5894725](#) A [];
[US6209515](#) B1 [];
[US6212884](#) B1 [];
[US6216449](#) B1 [];
[US6370868](#) B1 [];
[US6374597](#) B1 [];
[US2002056268](#) A1 [];
[US6389802](#) B1 [];
[US6568177](#) B1 [];
[US6889497](#) B2 [];
[US5529048](#) A [];
[US5915359](#) A [];
[US6240723](#) B1 [];



[US6244046](#) B1 [];
[US2002073696](#) A1 [];
[US6401454](#) B2 [];
[US2003106306](#) A1 [];
[US2003106307](#) A1 [];
[US6581372](#) B2 [];
[US6907862](#) B2 [];
[US2006137327](#) A1 [];
[US5531203](#) A [];
[US5784879](#) A [];
[US2001007191](#) A1 [];
[US6266957](#) B1 [];
[US6422003](#) B1 [];
[US6422004](#) B1 [];
[US2003131591](#) A1 [];
[US6594990](#) B2 [];
[US2001010149](#) A1 [];
[US2001013223](#) A1 [];
[US6427439](#) B1 [];
[US6434928](#) B1 [];
[US6438944](#) B1 [];
[US4222236](#) A [];
[US6451602](#) B1 [];
[US6453663](#) B1 [];
[US6453664](#) B2 [];
[US2003177761](#) A1 [];
[US2003178716](#) A1 [];
[US6792346](#) B2 [];
[US2001032456](#) A1 [];
[US6308515](#) B1 [];
[US2002141908](#) A1 [];
[US6463733](#) B1 [];
[US6467259](#) B1 [];
[US7121086](#) B2 [];
[US5992142](#) A [];
[US2001035008](#) A1 [];
[US6311482](#) B1 [];
[US2002170287](#) A1 [];
[US6477832](#) B1 [];
[US6481199](#) B1 [];
[US2003212484](#) A1 [];
[US2003213235](#) A1 [];
[US6651422](#) B1 [];
[US6813879](#) B2 [];
[US7134274](#) B2 [];
[US5473887](#) A [];
[US6327847](#) B1 [];
[US6327848](#) B1 [];
[US2002189235](#) A1 [];

[US2002189580](#) A1 [];
[US6487849](#) B1 [];
[US6487850](#) B1 [];
[US6490858](#) B2 [];
[US6497092](#) B1 [];
[US6829888](#) B2 []

CCI - [F01N3/0807](#) ; [F02D41/0255](#) ;
[F01N9/00](#) ; [F02D41/1446](#) ;
[F02D41/405](#) ; [F01N3/0231](#) ;
[F02D41/0007](#) ; [F02D41/0055](#)

CCA - [Y02T10/44](#) ; [Y02T10/144](#) ;
[Y02T10/26](#) ; [Y02T10/47](#) ;
[F02B3/06](#) ; [F02B37/00](#) ;
[F02M26/05](#) ; [F02M26/23](#)

PA - (B2)
 CUMMINS INC [US]

TI - (A1 B2)
 Diesel oxidation catalyst filter
 heating **system**

AB - (A1 B2)
 A **system, method**, and software that rapidly heats a diesel oxidation catalyst unit to an effective operating temperature at engine startup is disclosed. Upon ignition of an engine an electronic **control** unit is operable to lower a fresh air **flow** target value to a **reduced** fresh air **flow** target value as **well** as lower a **valve** opening limit of an exhaust **gas** recirculation **valve** to a **reduced valve** opening limit. The electronic **control** unit monitors a temperature value of a **flow** of exhaust entering the diesel oxidation catalyst unit until the temperature value reaches a first predetermined threshold value. After reaching the first predetermined threshold value, the electronic **control** unit causes the fuel **system** to set post-**injection** fueling to a predetermined post-**injection** fueling value until the temperature value of the **flow** of

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PN - [US4490985](#) A 19850101

PR - US19830509138 19830629

AP - US19830509138 19830629

DT - *

CT - [US625126](#) A []; [US2193209](#) A [];
[US2214368](#) A []; [US2528028](#) A [];
[US2586002](#) A []; [US2786802](#) A [];
[US2937503](#) A []; [US3226948](#) A [];
[US3541802](#) A []; [US3587243](#) A [];
[US3765168](#) A []; [US3854300](#) A [];
[US4132535](#) A []; [US4169506](#) A []

CTNP - [] Turboexpanders and Processes That Use Them, reprinted from
Chemical Engineering Progress, Jul., 1972, J. S. Swearingen, pp. 95 102
[] Turboexpanders and Expansion Processes for Industrial Gases, J. S. Swearingen, pp. 36 42
[] Engineer's Guide to Turboexpanders, reprinted from Hydrocarbon Processing, Apr., 1970, J. S. Swearingen

CCI - [C10G5/06](#) ; [B01D53/263](#) ; [C07C7/09](#)

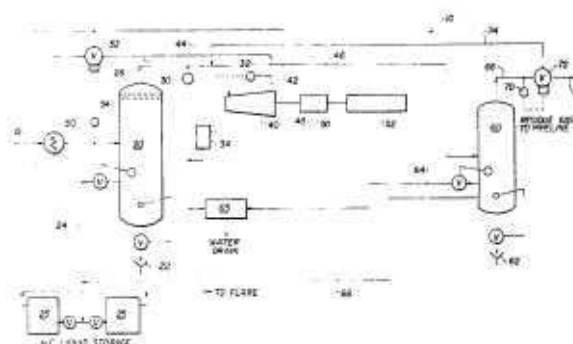
CLC - [C07C7/09](#) , [C07C9/04](#) , INV

CCA - [C10G2300/1025](#)

PA - GEN SIGNAL CORP [US]

TI - **Method** of dehydrating natural **gas**

AB - A **method** for dehydration of



natural **gas** is provided wherein **well head gas** is supplied to a three-phase inlet separator, the vapor mixture of natural **gas** and water removed from that inlet separator means is supplied to a turboexpander, and the resulting refrigerated mixture of natural **gas** and condensed water vapor is supplied to a multi-phase outlet separator. The turboexpander may have integral means for subsequent compression of the refrigerated mixture and may be coupled through **reduction** gears to a means for generating electricity. A portion of the refrigerated mixture may be connected to a heat exchanger for cooling the **well head** natural **gas** prior to entry into the inlet separator. The **flow** of refrigerated mixture to this heat exchanger may be **controlled** by a temperature sensitive **valve** downstream of the heat exchanger. Methanol may be **injected** into the vapor mixture prior to entry into the turboexpander. The **flow** of methanol into the vapor mixture may be **controlled** by a **valve** sensitive to the **flow** rate of the vapor mixture and the water vapor content of the refrigerated mixture. Natural **gas** vapor from the outlet separator may be recirculated through the turboexpander if the output water vapor content of the natural **gas** vapor stream is too high.

formed in the lower portion of the tubing string, which contains the undesired accumulated secondary fluids. A supply line is used to **inject** pressurized **gas** from the surface of the **well** into the accumulation chamber to provide the necessary **pressure** to force the accumulated secondary fluids, trapped in the accumulation chamber, through a relief **valve** and into the annulus of the **well** casing thereby removing the undesired secondary fluids from the **well** tubing. The **controller** then stops the **flow** of the **injected gas** to the supply line to stop the removal cycle. The supply line **pressure** is relieved, and the **pressure** across the **flow control** valves are equalized. The **flow control** valves are then opened and the producing **well** is returned to production with **reduced** back **pressure** due to the removal of the undesired, accumulated secondary fluids from the tubing.

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PN - [RU2314412](#) C1 20080110

PR - RU20060122507 20060626

AP - RU20060122507 20060626

DT - I

PA - OOO KLARIANT RUS [RU]

TI - **METHOD AND DEVICE FOR OIL WELL TREATMENT**

AB - FIELD: equipment for liquid inhibitor **injection** into annulus of **oil well** cluster with the use of pumping plant to prevent salt or paraffin deposit development or corrosion damage. ^ SUBSTANCE: **method** involves linking **injection** line of **well** treatment device to annulus of **well**; supplying inhibitor under **pressure** with the use of plunger pump from vessel into annulus via **injection** pipeline connected with plunger pump outlet; **controlling** inhibitor **flow** rate. Device is mounted on cross-country vehicle, which moves between **wells** of one or several **oil field well** cluster for serial treatment thereof. During each **well** treatment **pressure** in annulus is previously **reduced** and threshold **pressure** level is set in signaling manometer installed in **injection** line. Two or more inhibitor types are serially supplied along with provision of predetermined amount of each inhibitor delivery in reaction zone through produced liquid under

gravity. **Injection** line **pressure** is **controlled**. After termination of each inhibitor type supply **injection** line is cleaned with flushing liquid. **Oil well** treatment device comprises plunger pump, which may perform metered inhibitor supply in **well** annulus from vessel communicated with plunger pump inlet through sucking line, **injection** line connected to plunger pump outlet and provided with check **valve**, as **well** as inhibitor **flow** rate **control** means. Device also has at least one additional vessel connected with plunger pump inlet through suction line, vessel with flushing liquid and signaling manometer. ^ EFFECT: increased number of **wells** to be treated in unit time, possibility of necessary amount of inhibitor to be **injected**, prevention of inhibitor forcing in reservoir, possibility to supply several inhibitor types in single operation and decreased inhibitor consumption. ^ 4 cl, 2 dwg

71/115 © EPODOC / EPO

- PN - [RU2278964](#) C1 20060627
- PR - RU20040135346 20041203
- AP - RU20040135346 20041203
- DT - I
- TI - **METHOD FOR PRODUCTION WELL BOTTOM ZONE TREATMENT BY OUTFLOW**
- AB - FIELD: **oil** production industry, particularly enhanced recovery methods for obtaining hydrocarbons. ^ SUBSTANCE: **method** involves selecting **well** characterized by **reduced** intake capacity for following **well** treatment so that total outflow time is to be not more than 5 hours; bringing the selected **well** into operation for not less than 10 days along with liquid **injection** via the **well**; providing maximal conditional passage of **well** fittings; stopping liquid **injection** in **well**; discharging liquid from **well** to reach necessary calculated liquid volume at maximal **flow** rate; **injecting** liquid through the **well** at **flow** rate equal to 3 initial **well** intake capacity values up to **pressure** stabilization; **injecting** liquid in **well** at increased **flow** rate equal to 4 initial **well** intake capacity values; performing **flow** rate increase in several stages under stabilized **injection pressure**, wherein each **flow** rate increase step is equal to initial **well** intake capacity value, up to full **control valve** opening; discharging liquid from **well** at maximal **flow** rate so that discharged liquid volume is equal to calculated one; repeating liquid **injection** and discharge operations 3 times, wherein the last liquid discharge operation is carried out at maximal **flow** rate and in amount equal to the volume of the first liquid discharge. ^ EFFECT: increased **well** cleaning efficiency. ^ 1 ex

72/115 © EPODOC / EPO

- PN - [RU2003131056](#) A 20050427
- PNFP - RU2283946 C2 20060920
- PR - RU20030131056 20031022
- AP - RU20030131056 20031022
- DT - I
- PA - (C2)
NPOB BUROVAJA TEKHN OAO NPO BU [RU]; SHESHMAOJL OAO SHESHMAOJL AOOT [RU]
- TI - (C2)
METHOD FOR LOW-PERMEABLE PRODUCTIVE FORMATION TREATMENT
- AB - (C2)

FIELD: **oil** field development, particularly to stimulate **oil** production from low-permeable formation by formation treatment with acid. ^ SUBSTANCE: **method** involves lowering **flow** string provided with hydraulic pulsator in **well** so that **flow** string reaches productive formation zone; **injecting** calculated volume of acid in **well** via the **flow** string; forcing acid in productive formation to be treated under **pressure**; creating hydraulic pulses with the use of hydraulic pulsator and flushing **well**. Before **flow** string provided with hydraulic pulsator lowering in **well** orifice is created in pulsator wall. Check **valve** is installed in the orifice so that the check **valve** may be opened from **flow** string interior to provide acid **injection** in **well**. Then **flow** string is lowered in **well** up to productive formation bottom. After acid **injection flow** string and hydraulic pulsator are lifted to acid column top and reverse liquid circulation is performed with the use of the same pump along with **pressure** application to acid column. Acid is simultaneously subjected to hydraulic pulse application. Formation **injectivity** is **controlled** along with continuous circulation performing. Acid penetration intensity may be estimated from circulation liquid rate **reduction** in displacement tank of the pump. ^ EFFECT: increased efficiency of formation treatment and increased **oil** production from **well**. ^ 3 cl, 2 dwg

73/115 © EPODOC / EPO

PN - [RU2211920](#) C2 20030910

PR - RU20010127419 20011008

AP - RU20010127419 20011008

DT - I

PA - AFINOGENOV JURIJ ALEKSEEVICH; CHANYSHEV ANVAR ISMAGILOVICH

TI - **METHOD** OF HYDRAULIC FRACTURING OF FORMATION AND INCREASE OF ROCK PERMEABILITY AND EQUIPMENT FOR **METHOD** EMBODIMENT (VERSIONS)

AB - FIELD: mining, **oil** and **gas** producing industry; applicable in mineral mining through **wells** after performance of formation hydraulic fracturing and increase of rock permeability in macrovolumes in **well** zone. SUBSTANCE: **method** includes drilling of **well** to preset depth; testing of formation for product inflow; location of pumping unit at **well** head for supply of working agent to **well**; tailing-in mineral formation; stimulation by shock waves with help of hydraulic percussive device with transmission of shock waves through fluid waveguide in **well** with subsequent turning of wave from reflector to formation. Made additionally on **well** walls, within thickness of formation, are upper and lower circular and rectilinear stress concentrators with help of preliminarily lowered into **well** cutting tool. Then, lowered into **well** in assembly with drill string is **control valve** device with **system** of radial and longitudinal channels, bushing, spring-loaded **valve** and straddle packer designed for isolation of one of circular stress concentrators from atop and from its bottom. Lowered into **well** in composition with tubing are sub with **system** of radial and longitudinal channels with spring-loaded bushing, hydraulic percussive device, booster pump, high-**pressure** receiver with **controlled pressure**-relief **valve** - high-**pressure** generator-power hydraulic cylinder with **pressure** switch. Hydraulic percussive device is put in operation with help of surface pumping unit. After attaining the required value of working agent **pressure** in intrapacker spaces, its value is increased with help of hydraulic percussive device and surface pumping unit to shift down upper string-loaded two-diameter piston and fixing of its position inside fixed distance switch. **Pressure** in intrapacker spaces is closed

and channel to isolated circular stress concentrator is opened. **Pressure** boosting in said concentrator from high-**pressure** receiver is made similarly with help of hydraulic percussive device and surface pumping unit until occurrence of formation hydraulic fracture. **Pressure** of working agent in region of circular stress concentrator is **reduced** more than inside packers. Formation hydraulic fracturing is detected by sharp **pressure** drop when working agent is **injected** by surface pumping unit. After formation hydraulic fracturing, retainers of upper spring-loaded two-diameter piston of **pressure** fixed distance switch are released by **pressure** supplied to lower edge of lower spring-loaded two-diameter of piston-unfastener and by **pressure** relief in inrapacker spaces, and they are communicated with under-packer and above-packer spaces. After that, device assumes its initial position, and it is moved along **well** so that packers isolate by their sealing members the other circular stress concentrator, and all operations with it are performed similar to those with the first stress concentrator. Then, device is removed to surface, and device provided with two pairs of packers is lowered for simultaneous isolation of upper and lower circular stress concentrators and performance of hydraulic fracturing along rectilinear stress concentrators on **well** walls. After hydraulic fracturing along rectilinear stress concentrators, zone of rock weakening on **well** walls is expanded in macrovolumes and permeability is increased with elimination of plugged pores by cyclic hydraulic pulse stimulation with help of working agent **pressure**. Vertical fractures do not extend beyond boundaries of fractures in horizontal plane. EFFECT: provided limiting of zone covered by wave stimulation within preset limits of formation thickness. 6 cl, 23 dwg

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PN - [RU2189439](#) C2 20020920

PR - RU19990103802 19990222

AP - RU19990103802 19990222

DT - I

PA - TIMASHEV ANIS TAGIROVICH

TI - **METHOD OF DEVELOPING OIL DEPOSITS AND BLOCK COMPLEX SYSTEM OF PLANTS FOR METHODEMBODIMENT**

AB - **oil** producing industry, particularly, development of **oil** deposits. SUBSTANCE: **method** includes recovery of liquid and gaseous hydrocarbons with produced formation water from development **oil wells** and **injection** water **wells**. All plants in **oil** deposit development are made in blocks, at one section of land surface and arranged with consideration of wind rose. Fire safety of said plants are properly ensured. Infracfield **oil** gathering **system**, **injection** of working agent in the form of water, **gas**, **oil** into **oil**-bearing horizons and infracfield power network are replaced by intraplant connections and **oil** trunk pipelines and high-voltage power lines connecting development site with **oil** consumer and power supplying plants. Said plants are constructed simultaneously with **well** drilling and their successive putting into operation, their connection with **oil** and water discharge pipelines, aerial and cable power lines and, if require, they are laid in rapidly dismantled tubes connected with one another by put-on couplings. All plants with circuit supply from various feeders are provided with electric power. Development **wells** are arranged in clusters, by several rows, and their hole bottoms provide for uniform drainage of entire **oil**-bearing pool due to combination of various types of drilling with vertical, inclined and horizontal **wellbores** drilled from one

parent **wellbore**. Optimal formation **pressure** and filtration conditions of formation fluid to **wells** are maintained due to selective **injection** of associated **gas** into poorly permeable zones of **oil**-bearing formation. Used simultaneously is back **injection** of produced water into formation boundary zone and selectively into depressed sections inside **oil** pool outline. Use is also made of **gas**-water mixture as a working agent for maintaining of rational formation **pressure**. In so doing, **injected** into formation or into **well** are residual **gas** and **gas** supplied for use as a fuel of fire heater applicable for heating of **well** products and provision of full preparation of **oil**, **gas** and water for their realization. In production of nonemulsified or slightly emulsified **oil**, it is supplied directly to tubular **gas**-water separator and separated from the latter **gas** and water are, respectively, supplied to accumulating vessel and to lower part of **gas**-water separator with a stabilizing column head. **Oil** with low content of residual water, which in case of necessity of its deep desalting, is mixed with hot fresh water and demulsifier is supplied to vertical **gas**-water separator. For treatment of nonemulsified **oil**, it is supplied to middle part of tubular **gas**-water separator upper half. Residual **gas** is discharged through upper bypass **valve** to common **gas** line, and water, through automatically **controlled valve**. Opening or closing of said **valve** provides for **regulation** of position of water-**oil** contact between upper and lower permissible points **controlled** by level gages. EFFECT: **reduced** expenditures for deposit development, increased **oil** recovery from formations. 5 cl, 1 dwg

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PN - [RU2126908](#) C1 19990227

PR - RU19970107575 19970428

AP - RU19970107575 19970428

DT - I

PA - ROSSIJSKIJ UNI DRUZHBY NARODOV

TI - FUEL SUPPLY SYSTEM OF GAS DIESEL ENGINE WITH FUEL INJECTION

AB - FIELD: supply systems of internal combustion engines. SUBSTANCE: fuel supply **system** of **gas** diesel engine with fuel **injection** has a high-**pressure** fuel pump with **injection valve**, high-**pressure** pipeline, closed-type **injector** with overneedle and underneedle cavities, diesel fuel source, **oil** condensed **gas** source and a device connected to it for **pressure control**, diesel fuel feeding and supply cut-off lines, **oil** condensed **gas** feeding pipeline, as **well** as a check **valve**. The underneedle cavity of the **injector** is connected to the high-**pressure** fuel pump, and the **oil** condensed **gas** source is connected by the **oil** condensed **gas** pipeline via the check **valve**. The **oil** condensed **gas** source through the **gas** supply line is connected to the underneedle cavity of the **injector** through its overneedle cavity, that is hermetically closed and contains the inlet of the **oil** condensed **gas** pipeline and its outlet to the check **valve**. EFFECT: eliminated leakage and loss of **gas**, **reduced** toxicity of ejections and fire-hazard of engine. 2 cl, 4 dwg

76/115 © EPODOC / EPO

PN - [JP2005256632](#) A 20050922

PNFP - JP4351091B B2 20091028

PR - JP20040065862 20040309

AP - JP20040065862 20040309

DT - I

FI - B01D46/42&B; B01D53/36&103B; B01D53/36&103C; B01D53/86&100;
B01D53/86&222; B01D53/86&241; B01D53/90; B01D53/94&100; B01D53/94&222;
B01D53/94&241; B01D53/94&400; F01N11/00; F01N3/02&301A; F01N3/02&301C;
F01N3/02&321A; F01N3/02&321B; F01N3/02&321K; F01N3/022&A; F01N3/022&C;
F01N3/023&A; F01N3/023&K; F01N3/025&101; F01N3/035&A; F01N3/08&H+ZAB;
F01N3/10&A; F01N3/18&B; F01N3/24&E; F01N3/24&T; F01N3/28&301D;
F01N3/28&301F

FT - 3G090/AA03; 3G090/BA01; 3G090/CA05; 3G090/DA04; 3G090/DA09; 3G090/DA10;
3G090/DA12; 3G090/DA18; 3G090/EA02; 3G091/AA02; 3G091/AA10; 3G091/AA18;
3G091/AA28; 3G091/AB02; 3G091/AB05; 3G091/AB12; 3G091/AB13; 3G091/BA00;
3G091/BA14; 3G091/BA15; 3G091/BA19; 3G091/BA31; 3G091/BA32; 3G091/CA18;
3G091/CB02; 3G091/CB03; 3G091/DA01; 3G091/DA02; 3G091/DA08; 3G091/DB10;
3G091/EA01; 3G091/EA03; 3G091/EA05; 3G091/EA15; 3G091/EA17; 3G091/EA21;
3G091/EA30; 3G091/EA32; 3G091/EA33; 3G091/GA04; 3G091/GA05; 3G091/GA06;
3G091/GA20; 3G091/GB01W; 3G091/GB01X; 3G091/GB05W; 3G091/GB06W;
3G091/GB07W; 3G091/GB10W; 3G091/GB10X; 3G091/GB17X; 3G091/HA07;
3G091/HA09; 3G091/HA14; 3G091/HA15; 3G091/HA36; 3G091/HA37; 3G091/HA38;
3G091/HA42; 3G091/HB06; 3G190/AA02; 3G190/AA12; 3G190/AA16; 3G190/BA11;
3G190/BA17; 3G190/BA26; 3G190/BA41; 3G190/BA43; 3G190/BA44; 3G190/CA03;
3G190/CA08; 3G190/CA13; 3G190/CA14; 3G190/CA15; 3G190/CB13; 3G190/CB18;
3G190/CB23; 3G190/CB25; 3G190/CB34; 3G190/CB35; 3G190/DA03; 3G190/DA40;
3G190/DB02; 3G190/DB64; 3G190/EA01; 3G190/EA14; 3G190/EA23; 3G190/EA36;
3G190/EA42; 3G190/EA43; 4D048/AA06; 4D048/AA14; 4D048/AB01; 4D048/AB02;
4D048/AC09; 4D048/BA03Y; 4D048/BA16Y; 4D048/BA17Y; 4D048/BA28Y; 4D048/BA30Y;
4D048/BA31Y; 4D048/BA34Y; 4D048/BA35Y; 4D048/BA37Y; 4D048/BA38Y;
4D048/BA42Y; 4D048/BB02; 4D048/DA01; 4D048/DA02; 4D048/DA03; 4D048/DA05;
4D048/DA06; 4D058/MA44; 4D058/PA08; 4D058/SA08; 4D148/AA06; 4D148/AA14;
4D148/AB01; 4D148/AB02; 4D148/AB09; 4D148/AC09; 4D148/BA03Y; 4D148/BA16Y;
4D148/BA17Y; 4D148/BA28Y; 4D148/BA30Y; 4D148/BA31Y; 4D148/BA34Y;
4D148/BA35Y; 4D148/BA37Y; 4D148/BA38Y; 4D148/BA42Y; 4D148/BB02; 4D148/DA01;
4D148/DA02; 4D148/DA03; 4D148/DA05; 4D148/DA06

PA - (A)
MATSUOKA HIROSHI

TI - (A)
EXHAUST EMISSION **CONTROL SYSTEM**

AB - (A)
PROBLEM TO BE SOLVED: To provide an exhaust emission **control system** for purifying
exhaust **gas** by effectively **reducing** NO<SB>x</SB>in exhaust **gas** and oxidizing
particulate matters **well**.
- SOLUTION: This exhaust emission **control system** has an NO<SB>x</SB>**reduction**
catalyst 20 located upstream of an exhaust passage; two kinds of oxidation catalysts
14 and a filter catalyst 21 located downstream; an **injection valve** 22 for **injecting**
hydrocarbon-based fuel serving as a **reducing** agent upstream of the
NO<SB>x</SB>**reduction** catalyst 20; and a **controller** 30 for **controlling** the **injection**
quantity of the **injection valve** 22 in response to information on an exhaust **gas**

temperature, exhaust **gas flow** and NO_x concentration.

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PN - [JPH08254165](#) A 19961001

PNFP - JP3837179B B2 20061025

PR - FI19940006051 19941223

AP - JP19950333569 19951221

DT - I

CCI - [F02M43/00](#) ; [F02M43/04](#) ; [F02M47/046](#)

CCA - [F02B3/06](#) ; [F02M2200/44](#)

FI - F02M25/00&F; F02M25/00&S; F02M25/02&H; F02M25/02&K; F02M25/025&K;
F02M25/03; F02M43/00; F02M43/04; F02M47/00&C; F02M47/00&F; F02M61/10&C;
F02M61/20&N

FT - 3G066/AA07; 3G066/AB02; 3G066/AB08; 3G066/AD12; 3G066/BA23; 3G066/BA25;
3G066/BA51; 3G066/BA53; 3G066/CC13; 3G066/CC14; 3G066/CC28; 3G066/CD25;
3G066/CD28; 3G066/CE22; 3G066/DA01; 3G066/DA04; 3G066/DA06; 3G066/DC01;
3G066/DC09; 3G066/DC17

PA - (A)
WAERTSILAE DIESEL INT

TI - (A)
INJECTION DEVICE FOR INTERNAL COMBUSTION MACHINE

AB - (A)
PROBLEM TO BE SOLVED: To provide an **injection** device, particularly, of a diesel engine capable of accurately selecting an **injection** timing and a duration time, varying an **injection** state, and **reducing** nitrogen oxide produced in exhaust **gas**, as **well** as its use **method**. SOLUTION: A device **injecting** media of different pressures directly into the cylinders of an engine contains a first **valve** 3 and a second **valve** 4 **injecting** an additional medium, and **reduces** harmful substance produced by combustion with the additional medium. The second **valve** comprises a slender **valve** member 5 capable of being moved inside a **valve** body 2 against a force of a spring 12. A chamber 6 disposed on the cylinder side surrounds the **valve** member, and the additional medium is pressurized and **injected** into the chamber. In addition, the device is provided with a **control valve** 27 **controlled** by an electric signal 35, and the **control valve** 27 moves the **valve** member together with the **pressure** of the additional medium acting on a piston surface 7 inside the **valve** member to a position where the second **valve** opens and **injects** fuel.

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PN - [JPH06116989](#) A 19940426

PR - JP19920304333 19921001

AP - JP19920304333 19921001

DT - I

FI - B01D19/00&H; B01D19/00&101; B09B5/00&S; B09C1/00; B09C1/02; E03B3/15

FT - 4D004/AA41; 4D004/AB05; 4D004/AB06; 4D004/AC07; 4D004/CA01; 4D004/CA12; 4D004/CA13; 4D004/CA40; 4D004/CA47; 4D004/CA50; 4D004/CB45; 4D004/CB50; 4D004/CC02; 4D004/CC03; 4D004/CC05; 4D004/CC15; 4D004/DA01; 4D004/DA02; 4D004/DA20; 4D011/AA16; 4D011/AC03; 4D011/AC04; 4D011/AD03

PA - N ST ENTETSUKU KK; KANEHARA AKIJI

TI - **CONTROLLING METHOD** FOR WATER LEVEL OF EXTRACTED **WELL** BY VACUUM EXTRACTION **METHOD** AND INSIDE WASHING **METHOD** FOR THE **WELL**

AB - PURPOSE:To dissolve difficulty, etc., of operation **control** by using an air introduction pipe having an opening and shutting **valve** on its head and a sampling **well** water gauge, introducing simultaneously air in a sampling **well**, and discharging standing water in a **well** to **control** the water level. CONSTITUTION:A washing water opening and shutting **valve** 10 is opened to **inject** washing water to the inside of a **well** 1 from a washing water **injection** pipe through the upper part of the sampling **well** 1 in a state of near-atmospheric **pressure** by opening an air introduction pipe opening and shutting **valve** 8. After that, a vacuum device 3 is operated to **reduce pressure** again in the **well** 1, at the same time, the opening and shutting **valve** 8 is slightly opened to introduce a little amount of air to the bottom of the inside of the **well** 1, and washing water is bubbled. The opening and shutting **valve** 8 is shut after the elapse of a certain time, it is fully opened after several minutes to introduce air from an introduction pipe 6, and washing water is discharged to **gas-liquid** separation device 5 by using air lift operation. In addition, after such operation is repeated again, the inside of the **well** 1 is washed several times. According to the constitution, loading around a screen 7 is cleared, and cleaning efficiency of a polluted substance can be promoted.

79/115 © EPODOC / EPO

PN - [JPH03141814](#) A 19910617

PR - JP19900280379 19901018

AP - JP19900280379 19901018

DT - I

CT - [JPS6212717B](#) B2 []

FI - F01N3/08&B

FT - 3G091/AA18; 3G091/AA19; 3G091/AB04; 3G091/BA00; 3G091/BA14; 3G091/BA20; 3G091/CA17; 3G091/EA01; 3G091/EA03; 3G091/EA08; 3G091/EA17

PA - TAKUMA KK

TI - NITROGEN OXIDES (NOX) REMOVAL PROCEDURE FOR EXHAUST **GAS**

AB - PURPOSE:To **control** ammonia **gas injection** rate is easily and satisfactorily without necessitating a huge equipment cost by **controlling** the **injection** rate of ammonia **gas** in response to the detection value of the rotation speed of an engine. CONSTITUTION: Ammonia **gas** is **injected** into a mixer 4 from an **injection** duct 6, as **well** as exhaust **gas** discharged from an engine 1 is emitted into the atmosphere from a chimney 12 passing through the mixer 4, a catalytic tower 9, and an exhaust heat recovering **system** 10. With these means, after mixed with ammonia **gas** in the mixer 4, exhaust **gas** is processed with the selective **reduction** NOx removal procedure by ammonia **gas** in the catalytic tower 9. Then, a **control** unit 22 **controls** a **flow regulating valve** 8 based on the rotation speed of the engine 1 detected by a rotation speed detector 21, and mixes the optimum quantity of ammonia **gas** into exhaust **gas** in response to the nitrogen oxide

concentration in the exhaust **gas**. Therefore, the NOx removal efficiency of the exhaust **gas** by ammonia **gas** is maintained without variation within a fixed rate set in advance.

80/115 © EPODOC / EPO

PN - [JPH01110296](#) A 19890426
 PR - JP19870266410 19871023
 AP - JP19870266410 19871023
 DT - I
 CCA - [Y02E30/40](#)
 FI - B01F3/04&Z; G21D3/08&X+GDB
 FT - 4G035/AB15; 4G035/AB54
 PA - HITACHI LTD
 TI - **GAS INJECTION IN HIGH PRESSURE LIQUID AND ITS DEVICE**
 AB - PURPOSE: To perform trace quantity **injection control** by dissolving **gas** into liquid and **injecting** it in high **pressure** liquid. CONSTITUTION: Oxygen or hydrogen **gas reduced** by a **pressure reducing valve 2** at a little higher **pressure** than that of a tubing 7 in a reactor primary cooling water **system** and the like in a high **pressure** water loop is introduced in a dissolving liquid producing tank 3 and **gas** quantity firstly determined by Henry's law is dissolved in demineralized water. The dissolved liquid is continuously **injected** in the tubing 7 of the high **pressure** loop from the tank 3 by **gas pressure** as **flow** is **controlled** by a **flow regulating valve 4**. Further, two **gas** bombs and dissolving producing tank 3 or more may as **well** be provided parallelly. Therefore, **regulation** of delicate **gas** concentration can be performed.

81/115 © EPODOC / EPO

PN - [JPH09105344](#) A 19970422
 PR - JP19950263733 19951012
 AP - JP19950263733 19951012
 DT - I
 FI - F02D41/02&330A; F02D41/06&330A; F02D41/32&A; F02D41/34&N; F02D45/00&362H; F02D45/00&376C
 FT - 3G084/BA13; 3G084/BA14; 3G084/CA01; 3G084/DA09; 3G084/EB02; 3G084/EB09; 3G084/FA00; 3G084/FA01; 3G084/FA07; 3G084/FA13; 3G084/FA20; 3G084/FA29; 3G084/FA33; 3G084/FA36; 3G084/FA38; 3G301/HA01; 3G301/HA04; 3G301/JA00; 3G301/KA01; 3G301/LB02; 3G301/LB04; 3G301/LB06; 3G301/LC01; 3G301/MA11; 3G301/NC04; 3G301/NC06; 3G301/ND01; 3G301/ND07; 3G301/PA01Z; 3G301/PA09Z; 3G301/PB03A; 3G301/PB03Z; 3G301/PB08Z; 3G301/PD03A; 3G301/PD03Z; 3G301/PE01Z; 3G301/PE03Z; 3G301/PE08Z; 3G301/PF16Z; 3G384/AA01; 3G384/AA06; 3G384/BA13; 3G384/CA01; 3G384/DA13; 3G384/DA14; 3G384/EE31; 3G384/FA01Z; 3G384/FA15Z; 3G384/FA28Z; 3G384/FA56Z; 3G384/FA58Z; 3G384/FA64Z; 3G384/FA85Z
 PA - ISUZU MOTORS LTD
 TI - **FUEL INJECTION CONTROLLER OF ENGINE**
 AB - PROBLEM TO BE SOLVED: To restrain the generation of unburnt **gas** just after engine

starting as **well** as to aim at a **reduction** in exhaust **gas** by seeking a span of current-energization time for a solenoid **valve** of an **injector** conformed to the prescribed **injection** quantity necessary for the start of an engine, from engine speed and fuel **pressure** with a memory map. SOLUTION: A **controller** 10 reads those of engine speed, fuel **pressure**, cooling water temperature, intake air and atmospheric **pressure** from each of sensors 12 to 16 at a time when a driver turns a key switch to ON to start an engine. In addition, when a starter switch 11 is turned to ON, a basic target **injection** quantity (energizing time) is read out of a memory map on the basis of the engine speed and the fuel **pressure**. Then a water temperature correcting factor to this basic target **injection** quantity is read out of the memory map, while a correction factor having taken air density into account is read out of the memory map, calculating the target **injection** quantity with these correction factors. Subsequently this target **injection** quantity is given to an **injector** 6 and thereby fuel is sprayed to an intake **system** of the engine.

82/115 © EPODOC / EPO

PN - [JPH04136696](#) A 19920511
 PR - JP19900258500 19900927
 AP - JP19900258500 19900927
 DT - I
 FI - F41A1/04
 PA - JAPAN STEEL WORKS LTD
 TI - FLYING BODY FIRING DEVICE EMPLOYING LIQUID FUEL
 AB - PURPOSE:To prevent the damage of the sealing member of a sliding piston as **well** as the leakage of fuel and permit the **control** of the **injecting** amount of the fuel by a **method** wherein, an **injection** chamber and the sliding piston are arranged in the internal diametral section of two sleeves, forming a cylinder when they are contacted closely with each other, to form a chamber while a fuel passage is formed in a gap between both sleeves. CONSTITUTION:When a movable sleeve 24 is contacted closely with a fixed sleeve 22, one set of cylindrical member is formed. Liquid fuel is supplied from a fuel tank 54 into a chamber 46 and a sliding piston 42 is moved rightward by the **pressure** of the fuel whereby the chamber 46 is filled with the fuel. Both of the sleeves are contacted closely with each other when the sliding piston 42 is moved whereby a seal member 44 is not damaged and the fuel in the chamber 46 is not leaked. When a **control valve** 34 is switched and the movable sleeve 24 is moved rightward, a gap 80 is formed between both sleeves. When igniting operation is effected by an igniting device 18, an **injection** piston 40 is moved rightward by the **pressure** of combustion **gas** in a combustion chamber 16, the fuel is **injected** into the combustion chamber 16 through the gap 80 and is burnt explosively whereby a flying body 14 is fired. In order to **reduce** the amount of **injection** of the fuel, the movable sleeve 24 is moved leftward to **reduce** the gap 80.

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PN - [JPS61138816](#) A 19860626
 PNFP - JPH0585728B B2 19931208
 PR - JP19840257653 19841207

AP - JP19840257653 19841207

DT - **

CT - (A)
[JPS4812002](#) A []; [JPS5922907U](#) U []

CCI - [F01P3/08](#) ; [F01P7/167](#) ; [F02F3/26](#) ; [F02B23/101](#)

CCA - [Y02T10/125](#) ; [Y02T10/123](#) ; [F01P2007/146](#) ; [F01P2023/08](#) ; [F01P2025/08](#) ;
[F01P2025/40](#) ; [F01P2025/62](#) ; [F01P2025/64](#) ; [F02B2075/125](#) ; [F02D2041/389](#)

FI - F01P3/08; F01P3/08&A; F01P3/08&C; F01P7/14; F01P7/16&506; F02B23/06&E

FT - 3G023/AA04; 3G023/AA05; 3G023/AA18; 3G023/AB01; 3G023/AC05; 3G023/AD02;
3G023/AD09; 3G023/AD10; 3G023/AD11; 3G023/AG04

PA - (A)
TOYOTA MOTOR CORP

- (B2)
TOYOTA MOTOR CO LTD

TI - (A)
FUELEVAPORATION RATE **CONTROL SYSTEM** FOR DIRECT-**INJECTION** INTERNAL-
COMBUSTION ENGINE

AB - (A)
PURPOSE:To check a combustion noise in time of high load as **well** as to aim at exhaust
emission **control** in time of low load, by spouting a cooling **oil** jet to the wall backside of
a combustion chamber of a piston in a direct-**injection** type internal-combustion
engine, while **controlling** an **oil** jet quantity according to driving conditions.
CONSTITUTION:In case of a direct-**injection** type engine which makes **injection** fuel once
stick to the inside of a combustion engine 4 formed in a piston 1 and accelerates
evaporation of the sticking fuel by heating out of a wall surface of the combustion
chamber, an **oil** jet 11 is spouted to the wall backside of the combustion chamber 4
from an **oil** nozzle 10 installed in a lower part of the piston 1. An **oil** quantity for the
nozzle 10 is **controlled** by a needle 15 of a solenoid **valve** 14 according to driving
conditions on the basis of a signal out of a **control** unit 17. In time of high load, the **oil**
quantity is increased, cooling the combustion chamber wall surface properly, whereby
combustion **pressure** is lowered down to some extent, promoting the **reduction** of NOx,
and in time of low load, the **oil** quantity is decreased and HC and combustion variations
are checked.

84/115 © EPODOC / EPO

PN - [JPH1162604](#) A 19990305

PNFP - JP3751721B B2 20060301

PR - JP19970232745 19970828

AP - JP19970232745 19970828

DT - I

CCI - [F02D41/221](#) ; [F02B37/18](#) ; [F02B37/24](#) ; [F02D41/0007](#)

CCA - [Y02T10/40](#) ; [Y02T10/144](#)

FI - F02B37/12&301Q; F02B37/24; F02B39/16&F

FT - 3G005/DA02; 3G005/EA04; 3G005/EA15; 3G005/EA16; 3G005/FA23; 3G005/FA24;
3G005/FA48; 3G005/FA57; 3G005/GA03; 3G005/GA04; 3G005/GB24; 3G005/GB27;

3G005/GB86; 3G005/GC05; 3G005/GC07; 3G005/GD12; 3G005/GE08; 3G005/GE09;
3G005/GE10; 3G005/JA24; 3G005/JA31; 3G005/JA39; 3G005/JA42; 3G005/JA52;
3G005/JB02

- PA - (A)
TOYOTA MOTOR CORP
- TI - (A)
ABNORMALITY JUDGING **METHOD** OF VARIABLE DISPLACEMENT TURBOCHARGER
- AB - (A)
PROBLEM TO BE SOLVED: To judge generation of abnormality caused by indisposed operation of a variable displacement mechanism without providing a specified detecting device and the like, in a variable displacement turbocharger. SOLUTION: At the time of idling operation, engine speed is set to a prescribed value, and a solenoid spill **valve** 43 is **controlled** by an electronic **control** unit(an ECU) 92 so as to **regulate** a fuel **injection** amount. When the nozzle vane 74 of a turbocharger 35 is fixed as **well** as closing, **flow** of exhaust **gas** is blocked, and the output of the engine is **reduced**. The fuel **injection** rate is increased by the ECU 92 for correcting the **reduction** of the output. The fuel **injection** amount at the time of a normal condition is memorized beforehand by the ECU 92, and is compared with a present fuel **injection** amount. When a deviation between them is a prescribed value or more, it is judged that an abnormal condition is generated in the variable displacement mechanism (the nozzle vane 74).

85/115 © EPODOC / EPO

- PN - [JPH0966351](#) A 19970311
- PR - JP19950223652 19950831
- AP - JP19950223652 19950831
- DT - I
- FI - B22D17/14; B22D17/32&J; B29C45/34
- FT - 4F202/AA49; 4F202/AM32; 4F202/AP02; 4F202/AP06; 4F202/AQ04; 4F202/AR02;
4F202/CA11; 4F202/CB01; 4F202/CK06; 4F202/CM02; 4F202/CP05; 4F202/CP06;
4F202/CP10
- PA - OLYMPUS OPTICAL CO
- TI - VACUUM DIE CASTING **METHOD**
- AB - PROBLEM TO BE SOLVED: To judge whether there is blow hole or not without cutting a product by detecting the **pressure** variation in a surge tank of a vacuum device and casting while detecting a **gas** venting state in a cavity of a metallic mold. SOLUTION: Molten metal is poured into the cavity 9 constituted of a fixed die 1 and a movable die 5. After the clamping, the molten metal is poured into an **injection** sleeve 4, and a plunger tip 15 is advanced to close a molten metal supplying hole 3 with the tip 15. A limit switch 18 for starting the **reduced pressure** is activated by a striker 17 arranged in an **injection** rod 10. A signal of the switch 8 opens a solenoid **valve** 22 through a **control** device 26, and the air in the cavity 9 is discharged from a vacuum pump 24. A vacuum degree of the surge tank 23 before the vacuum pump 24 is measured with a vacuum meter 25. The **pressure** when the vacuum degree comes to the worst, is compared with a prescribed value, and it is decided whether the vacuum degree in the cavity 9 is proper or not. Since the vacuum degree in the cavity 9 is kept **well**, the blow hole is not caused in the product.

86/115 © EPODOC / EPO

PN - [JPS59103905](#) A 19840615
PR - JP19820212814 19821206
AP - JP19820212814 19821206
DT - I
CCI - [F01K13/02](#)
FI - F01D17/24&Z; F01K21/00&C; F03G4/00&521; F03G4/06
FT - 3G071/AB03; 3G071/BA02; 3G071/BA04; 3G071/BA22; 3G071/CA09; 3G071/DA02;
3G071/DA05; 3G071/EA03; 3G071/EA06; 3G071/EA07; 3G071/FA02; 3G071/FA03;
3G071/GA00; 3G071/GA05
PA - TOSHIBA KK
TI - GEOTHERMAL-TURBINE **CONTROLLER**
AB - PURPOSE: To prevent the carry-over of hot-water or water induction into a turbine, by closing steam **regulating** valves at the inlet of the turbine when the **pressure** in a steam piping **system** including a separator and a flasher **reduces** exceedingly. CONSTITUTION: The geothermal steam gushed-out from a **well** 1 is **gas**-water- separated by a separator 2, and the steam is introduced into a steam turbine 6 through a steam **regulating valve** 5. The steam in a flasher 9 flows into the steam turbine 6 through a steam **regulating valve** 12. When the **pressure** in a steam piping **system** including the separator 2 and the flasher 9 **reduces** and each hot-water level 13, 15 increases, the steam **regulating** valves 5 and 12 at the inlet of the turbine 6 close. Thus, the carry-over to the turbine and water **injection** can be prevented.

87/115 © EPODOC / EPO

PN - [JPH07151740](#) A 19950616
PNFP - JP2960856B B2 19991012
PR - US19930088677 19930707
AP - JP19940177689 19940707
DT - I
CCI - [G01N30/68](#) ; [G01N30/30](#)
CCA - [G01N2030/025](#) ; [G01N2030/3007](#) ; [G01N2030/3076](#) ; [G01N2030/8886](#)
FI - G01N30/54&F; G01N30/66; G01N30/68&A
PA - (A)
UNION CARBIDE CHEM PLASTIC
TI - (A)
METHOD AND DEVICE FOR HIGH-SPEED GAS CHROMATOGRAPHY AND APPLICATION THEREOF
AB - (A)
PURPOSE: To **reduce** time necessary for execution of analysis by minimizing **system** dead volume as **well** as a sample and component band width. CONSTITUTION: **Flow control** of carrier **gas** 13 is performed by **controlling** head **pressure** of a chromatography column 5 using a **pressure regulator**, and ventilating the column 5 to atmospheric **pressure**. For sample **injection**, part of it is **injected** to a front end of the

column 5, the sample has a plug **flow** profile having a sharply defined boundary, and a plug has a width of 50m.sec or less. For usage of a **valve** 3 in which an inner sample loop and a coupling of a small dead volume are installed, a sample width is set to be about 10m.sec. or less. The column 5 is, favorably, a fused silica capillary. The column 5 is heated by air or nitrogen kept in contact with a heater. Length of the column 5 is set at the shortest possible, and it is connected to a sample **injector** 3 and a frame ionization detector 7 using a coupling of a small dead volume. For an electrometer 8, its response time is increased for every 2m.sec.

88/115 © EPODOC / EPO

PN - [JPS6053784](#) A 19850327
 PR - JP19830162022 19830905
 AP - JP19830162022 19830905
 DT - I
 CCI - [F28B9/00](#)
 FI - F28B9/00; F28B9/08
 PA - TOSHIBA KK
 TI - CONDENSER DEVICE FOR NUCLEAR POWER PLANT
 AB - PURPOSE:To dissolve O2 **gas** into condensed water efficiently and **reduce** generation of corrosive products as **well** as the generating amount of radio activity in the plant by a **method** wherein the device is provided with an **injection** nozzle, **injecting** O2 **gas** into a hot **well** at the lower part of the device and with an O2 dissolving plate at the upper part thereof. CONSTITUTION:The nozzle 8 is provided in the condensed water in the hot **well** 3 to **inject** O2 **gas** in a **gas** bomb through a **flow** amount **regulating valve** and an O2 **injecting** pipe 11. A plurality of **gas** dissolving plates 12 are provided above the nozzle 8 to increase the dissolving efficiency of O2 **gas** into the condensed water while the dissolving plates 12 are provided with **gas** reserving parts 13 and O2 **gas** rising holes 14 and are arranged with intervals above the **injecting** nozzle 8. In the condenser, provided with the O2 dissolving plates 12, a part of the O2 **gas**, blown off from the O2 **gas** **injecting** nozzle 8 and risen upwardly, may be stagnated in the O2 **gas** reserving parts 13 of the dissolving plate 12 and the condensed water contacts with the reserved O2 **gas**. Accordingly, the dissolving efficiency of the O2 **gas** into the condensed water is increased, the amount of corrosive products may be **reduced** and generation of radioactivity in BWR plant may be restricted.

89/115 © EPODOC / EPO

PN - [JPS5862325](#) A 19830413
 PNFP - JPH0325622B B2 19910408
 PR - JP19810160060 19811009
 AP - JP19810160060 19811009
 DT - I
 CT - || STSE (A)
[JPS5618036](#) A 19810220 [] (NISSAN MOTOR);
[JPS57186039](#) A 19821116 [] (HITACHI LTD)
 CCI - [F02D41/123](#)

FI - F02D41/12; F02D41/12&330J; F02D41/12&330Z

FT - 3G001/BA06; 3G001/CA00; 3G001/CA05; 3G001/DA00; 3G001/DA02; 3G001/DA05; 3G001/EA00; 3G001/EA01; 3G001/FA01; 3G001/FA08; 3G001/GA01; 3G001/GA04; 3G001/GA05; 3G001/GA07; 3G001/GA08; 3G001/GA09; 3G001/GA11; 3G001/GA18; 3G301/BA06; 3G301/CA00; 3G301/CA05; 3G301/DA00; 3G301/DA02; 3G301/DA05; 3G301/EA00; 3G301/EA01; 3G301/FA01; 3G301/FA08; 3G301/GA01; 3G301/GA04; 3G301/GA05; 3G301/GA07; 3G301/GA08; 3G301/GA09; 3G301/GA11; 3G301/GA18; 3G301/HA01; 3G301/HA06; 3G301/JA25; 3G301/JA26; 3G301/KA17; 3G301/LB02; 3G301/LC01; 3G301/MA01; 3G301/MA12; 3G301/MA24; 3G301/NA08; 3G301/NB14; 3G301/NB15; 3G301/NE09; 3G301/PA01Z; 3G301/PA10Z; 3G301/PA11Z; 3G301/PA12Z; 3G301/PE03Z; 3G301/PE05Z; 3G301/PE08Z

PA - (A)
TOYOTA MOTOR CO LTD

TI - (A)
ELECTRONIC **CONTROL** FUEL-INJECTION ENGINE

AB - (A)
PURPOSE:To **control** fuel **oil** consumption in a pertinent manner as **well** as to **reduce** discharge of harmful exhaust, by carrying out a fuel cut on a specified condition in the opening of a suction **system** throttle **valve** or the suction **pressure** of an inlet pipe, or a **reduction** of fuel **oil** consumption otherwise, in case of such an engine that **injects** fuel into the suction **system**. CONSTITUTION:A solenoid operated fuel-injection **valve** 14 is installed in an inlet pipe 6 correspondingly with each combustion chamber 9. An electronic **control** device 15 is connected to a throttle sensor 16 and a crank angle sensor 23, etc., which are all used to detect the opening of a throttle **valve** 2. At the initial step in deceleration that the **reduced** speed of opening in a suction **system** throttle **valve** 4 is larger than the specified value, a fuel cut is carried out. At the middle period in deceleration that the **reduced** speed of said suction **system** throttle **valve** opening is smaller than the specified value, a **reduction** of fuel **oil** consumption is carried out. With these procedures, the fuel **oil** consumption can be pertinently **controlled** over the whole period of deceleration and the discharge of harmful exhaust is thus **reducible**.

90/115 © EPODOC / EPO

PN - [JPS5943957](#) A 19840312

PR - JP19820155012 19820906

AP - JP19820155012 19820906

DT - I

CCI - [F02M63/00](#)

FI - F02D1/02&F; F02M41/12&350Z; F02M51/04&C; F02M59/36; F02M59/36&A

FT - 3G060/AB03; 3G060/AC10; 3G060/BA00; 3G060/BA02; 3G060/BA20; 3G060/CA01; 3G060/FA02; 3G060/FA07; 3G066/AA07; 3G066/AB02; 3G066/AC04; 3G066/BA12; 3G066/BA61; 3G066/BA67; 3G066/CA03; 3G066/CA04U; 3G066/CE22

PA - DIESEL KIKI CO

TI - FUEL FEED AMOUNT **CONTROLLER** OF FUEL **INJECTION** PUMP

AB - PURPOSE:To miniaturize a device as a whole, by a **method** wherein one more electromagnetic installed separately **valve** makes it possible to **reduce** the capacity of

the first electromagnetic **valve**, as **well** as to perform more reliable **control** operation through smooth operation of a first electromagnetic **valve**. CONSTITUTION:While a first electromagnetic **valve** 1 is brought into an OFF state, an electromagnetic **valve** 20 repeats ON and OFF operations by means of a pulse signal S2. Thus, while a movable **valve** 2 is in contact with a seat part 7, the **pressure** in a **flow** passage 7a communicating with a fuel chamber 3 is gradually **reduced** to lower than the **oil pressure** level under which a plunger 1 is restorable to the original position. As a result, when the movable **valve** 2 restores, the resistance as before is not applied thereto, and with the electromagnetic **valve** 1 switched ON, the movable **valve** 2 restores in an excellent manner, and the movable **valve** 2 is spaced away from the seat part 7. Thus, the amount of the fuel fed to the plunger pump chamber 6 side varies approximately in synchronism with ON or OFF operation of the electromagnetic **valve** 1.

91/115 © EPODOC / EPO

PN - [JPS5770317](#) A 19820430

PNFP - JPS6364688B B2 19881213

PR - JP19800146373 19801021

AP - JP19800146373 19801021

DT - I

FI - F23G5/50&E; F23G5/50&M; F23G7/00&103A

FT - 3K061/AA11; 3K061/AB01; 3K061/AC03; 3K061/BA02; 3K061/BA08; 3K061/CA17; 3K061/EA01; 3K061/EB14; 3K062/AA11; 3K062/AB01; 3K062/AC03; 3K062/BA02; 3K062/BB02; 3K062/CA01; 3K062/CB05; 3K062/CB06; 3K062/DA01; 3K062/DA07; 3K062/DA36; 3K062/DB01; 3K062/DB05; 3K062/DB07; 3K062/DB13; 3K062/DB16; 3K161/AA14; 3K161/AA23; 3K161/BA02; 3K161/CA01; 3K161/DA52; 3K161/EA08; 3K161/EA09; 3K161/FA64; 3K161/FA67

PA - (A)
BABCOCK HITACHI KK

TI - (A)
COMBUSTION OF COLLECTED ASH WITH VARIOUS CAORIFIC VALUES

AB - (A)
PURPOSE:To **reduce** the generation of NOX and as **well** as attain the satisfactory combustion of a fluidized bed by a **method** wherein the temperature of the fluidized bed is **controlled** by using the **flow** rates of a combustion assistant burner and a flue tube burner as the **controlling** at the combustion of the ashes collected from the exhaust **gas** of boilers in a fluidized bed furnace. CONSTITUTION:Combustion assistant fuel is supplied through a piping 12, a **controlling valve** 22 and a **flow** meter 23 to the combustion assistant burner 24. Main fuel is supplied through a piping 26, a **controlling valve** 27 and a **flow** meter 28 to the fuel **injection** burner 25. The signals representing the **flow** rates of the fuels supplied to the **flow** meters 23 and 28 are sent to a **controlling** box 21. The **controlling** box 21 descriminates, based on the temperatures and delivery volume of the combustion air due to said signals, that the ashes to burn has high calorific value or low calorific value, **controlling** the rotational frequency of rotary feeders 16a and 16b, the fuel supply rates by means of the **controlling** valves 22 and 27 and the **flow** rates of exhaust **gas** by means of dampers 30 and 32. At this time, the temperature of the fluidized bed is **controlled** to be about 645-675 deg.C for the ashes with low or medium calorific value and about 645-670 deg.C for the ashes with

high calorific value and yet the temperature at the flue tube is **controlled** to be about 700-900 deg.C.

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PN - [JPS6119963](#) A 19860128
PR - JP19840140975 19840706
AP - JP19840140975 19840706
DT - I
CT - || STSE (A)
[JPS5416040](#) A 19790206 [] (SUTEBIRIMENTEI MEKANICHI BUIEM)
CCI - [F01P3/16](#) ; [F01P9/00](#) ; [F01M9/10](#)
FI - F02M37/00&341A
PA - YANMAR DIESEL ENGINE CO
TI - FUEL-**INJECTION** PUMP LUBRICATING **SYSTEM** FOR INTERNAL-COMBUSTION ENGINE
AB - PURPOSE:To dispense with any installation of an exclusive **oil** tank for a fuel-**injection** lubricating **system** and an **oil** feed pump either as **well** as to simplify the fuel-**injection** pump lubricating **system** in structure, by connecting the fuel-**injection** lubricating **system** to a fuel **injection valve** cooling **oil system**. CONSTITUTION:Turbine **oil** pumped up by a **oil** feed pump 7 from an **oil** tank 5 via a filter 6 is fed to an inlet end part of a cooling **oil** main pipe 10 via a heater 8 and a joint 9. A **pressure-regulating valve** 23 **reduces** the amount of turbine **oil** flowing in a lubricating main pipe 16 so as to make the more upstream side than the **valve** keep in a high **pressure** of 6-7kg or so, while it makes the **flow** rate into a larger on so as to cause the more downstream side to keep up a lower **pressure** of 2kg/cm<2>, respectively. The turbine **oil** inside the lubricating main pipe 12 is fed to the inside of each fuel-**injection** pump 2 via each branch pipe 20 and lubricates all sliding surface parts of a plunger inside the fuel-**injection** pump 2.

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PN - [JPS61286568](#) A 19861217
PR - JP19850127316 19850612
AP - JP19850127316 19850612
DT - I
CCA - [F02B3/06](#)
FI - F02M25/07&540C; F02M25/07&550K; F02M26/00&311
FT - 3G062/AA01; 3G062/CA00; 3G062/CA03; 3G062/DA00; 3G062/DA01; 3G062/DA02; 3G062/EA07; 3G062/EB15; 3G062/EB16; 3G062/FA25; 3G062/GA00; 3G062/GA04; 3G062/GA06; 3G062/GA25; 3G062/GA30
PA - TOYOTA MOTOR CORP
TI - EXHAUST **GAS** RECIRCULATION **CONTROLLING METHOD** FOR DIESEL ENGINE
AB - PURPOSE:To aim at **reduction** in exhaust smoke and NOx content in exhaust **gas**, by performing an exhaust **gas** recirculation at a time when idling, where an automatic transmission is set to a running range, is in shortness and, when this idling keeps on doing longer, **reducing** an EGR quantity or stopping the exhaust **gas** recirculation.

CONSTITUTION:At engine running, first an optimum exhaust **gas** EGR **flow** rate Qegr is determined according to the fuel **injection** quantity calculated separately and an engine speed at a **control** unit 25. Next, the release of operation on an accelerator pedal 19 is detected by an accelerator sensor 27, and at the time of such idling as being detected as a car speed is almost zero by a car speed sensor 29 as **well** as when an automatic transmission 14 is set to a driving range of a D range or the like from a shift range sensor 29, discrimination of whether the specified time elapsed since this running state has started or not is carried out. And, when YES is the case, the said EGR **flow** rate Qegr is multiplied by a compensation factor $x (<1)$, compensating this Qegr for decrement. And, when NO is the case, a pulse signal in the duty ratio conformed to the Qegr is outputted to a suction **pressure regulating valve** 43.

94/115 © EPODOC / EPO

PN - [JPH04327762](#) A 19921117
 PR - JP19910096727 19910426
 AP - JP19910096727 19910426
 DT - I
 FI - F25B1/00&311C; F25B1/00&321Q
 PA - HITACHI LTD; HITACHI SHIMIZU ENG KK
 TI - FREEZING CYCLE IN THERMOSTATIC DEVICE
 AB - PURPOSE:To make a proper setting of an **injection** volume and an **oil** cooler passing amount and to restrict a disturbance of a freezing cycle as **well** as a disturbance of humidity **control** by a **method** wherein an electronic **valve** capable of **controlling a flow** rate of refrigerant is applied and a liquid **injection** device and an **oil** cooler mechanism are integrally assembled. CONSTITUTION:Each of an evaporator 4, a heater 6, a humidifier 7 and a blower 8 is disposed within a spacing defined by a thermal insulating material 15. The evaporator 4 constitutes one freezing cycle together with a compressor 1, a condensor 2 and a **pressure reducing** mechanism 3. With such an arrangement as above, a branch part is provided between the condensor 2 and the **pressure reducing** mechanism 3, and an inlet pipe of the **oil** cooler 1a is connected to the branch part. In turn, an outlet pipe of the **oil** cooler 1a is connected to a branch between the evaporator 4 and a suction side of the compressor 1 through an electronic expansion **valve** 5. The electronic expansion **valve** 5 is **controlled** by a **controlling** micro-computer 16 in response to a room temperature, a **gas** temperature, a hot water temperature and a water temperature detected by each of a plurality of sensors 9, 11, 12 and 13.

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PN - [JPS5514937](#) A 19800201
 PNFP - JPS6053783B B2 19851127
 PR - JP19780087398 19780717
 AP - JP19780087398 19780717
 DT - I
 CCI - [F02M35/10177](#) ; [F02M35/10216](#) ; [F02M35/10255](#) ; [F02M35/10268](#) ; [F02M35/108](#) ; [F02B31/08](#) ; [F02M69/043](#) ; [F02M35/10085](#)

CCA - [Y02T10/146](#) ; [Y02T10/14](#) ; [F02M35/10386](#) ; [F02M69/044](#)

FI - F02B31/00&G; F02B31/00&311F; F02B31/06&522C; F02B31/08&522F; F02D9/02&361C; F02M29/00&G; F02M69/00&350P; F02M69/00&360P; F02M69/04&U

FT - 3G065/AA07; 3G065/AA11; 3G065/CA00; 3G065/CA11; 3G065/CA12; 3G065/DA02; 3G065/FA04; 3G065/HA02

PA - (A)
YAMAHA MOTOR CO LTD

TI - (A)
FUEL **INJECTION SYSTEM** INTERNAL COMBUSTION ENGINE

AB - (A)
PURPOSE:To **reduce** the variation of air-fuel ratio of fuel **injection system** internal combustion engine for taking corrective action against exhaust **gas** by supplying intake introduced from between a throttle **valve** and **controlling valve** downstream thereof through a sub-intake path to a combustion chamber to form eddy current therein.
CONSTITUTION:Either a throttle **valve** 14 or **controlling valve** 15 is made a butterfly **valve**. When an engine is started with the throttle **valve** 14 being closed, negative **pressure** of intake downstream of the throttle **valve** 14 is increased so that a drive 16 drives the **controlling valve** 15 to be closed. Fuel **injected** from a nozzle 29 is supplied from a sub-intake path 11 to a combustion chamber 4. As the throttle **valve** 14 is opened gradually, the **controlling valve** 15 is gradually opened to supply intake from the sub-intake path 11 and both main intake paths 10, 7. Fuel **injected** from nozzles 28, 29 is dispersed widely over the surfaces of the throttle **valve** 14 and **controlling valve** 15 while the fuel is **well** atomized and fuel attached to the inside of the main intake path 10 is **reduced** since the intake abuts directly against these surfaces.

96/115 © EPODOC / EPO

PN - [JP55514926](#) A 19800201

PR - JP19780087057 19780719

AP - JP19780087057 19780719

DT - I

FI - F02C3/30&B; F02C9/48

PA - HITACHI LTD

TI - WATER **INJECTION SYSTEM** FOR GAS TURBINE

AB - PURPOSE:To make a safety operation capable, with an emission **reduced** as **well** of nitrogen oxide, by **controlling** a quantity of water **injection** into the combustor, in the **method** of detecting the temperature of air and exhaust **gas**, the **pressure** of compressed air and the **pressure** surge in the combustor with a specific operation processed. CONSTITUTION:With an exhaust **gas** temperature detector 10 and a compressed air **pressure** detector 11 provided, both of the outputs are added by an adder 16 to make corresponding to the combustion temperature within a combustor 4. And at the inlet to an air compressor 2 is provided a temperature detector 9 for air 1, and this output and an output of the adder 16 are multiplied 17, to correct the combustion temperature from the air temperature, with this output **controlling the flow** rate of a water **injection** 13 in proportion to the combustion temperature. Further with a **pressure** surge detectot 12 provided in the combustor 4 and an upper limiter 20 provided, this output and a lower output of the multiplier 17 make a **control** of the **flow**

rate **control valve** 14. In this way, at the state of **pressure** surge being low, a nitrogen oxide emission is **reduced** by providing a quantity of water **injection** proportional to the temperature, simultaneously with a limit operation acted for a high **pressure** surge to enable an operation of the combustor to be safe.

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PN - [JPS5514918](#) A 19800201

PNFP - JPS626094B B2 19870209

PR - JP19780086879 19780717

AP - JP19780086879 19780717

DT - I

CT - || STSE (A)
[JPS5273233](#) A 19770618 [] (MITSUBISHI MOTORS CORP)
[JPS4958229](#) A 19740606 []
[JPS50148722](#) A 19751128 []

FI - F02D3/00&D; F02D41/04&345C; F02D41/26; F02D41/32&A; F02D41/32&B; F02D41/34; F02D41/34&A; F02D41/34&B; F02M51/02&Z; F02M69/00&380Z; F02M69/46&Z

FT - 3G001/AA03; 3G001/BA00; 3G001/BA01; 3G001/BA06; 3G001/BA08; 3G001/BA09; 3G001/GA01; 3G001/GA09; 3G001/GA18; 3G066/AA01; 3G066/AB02; 3G066/AD11; 3G066/BA02; 3G066/BA19; 3G066/BA21; 3G066/BA51; 3G066/BA61; 3G066/BA65; 3G066/CB07U; 3G066/CB15; 3G066/CB16; 3G066/CC06T; 3G066/CC15; 3G066/CC24; 3G066/CC40; 3G066/CC48; 3G066/CC53; 3G066/CD25; 3G066/CD26; 3G066/CD29; 3G066/CD30; 3G066/CE13; 3G066/CE22; 3G066/CE34; 3G066/DA01; 3G066/DA06; 3G066/DC04; 3G066/DC11; 3G066/DC14; 3G066/DC24; 3G301/AA03; 3G301/BA00; 3G301/BA01; 3G301/BA06; 3G301/BA08; 3G301/BA09; 3G301/GA01; 3G301/GA09; 3G301/GA18; 3G301/HA06; 3G301/JA00; 3G301/JA03; 3G301/LB03; 3G301/LB06; 3G301/LC01; 3G301/MA01; 3G301/MA12; 3G301/NE23; 3G301/PA01Z; 3G301/PD01Z; 3G301/PE02Z; 3G301/PE06Z; 3G301/PE08Z

PA - (A)
MITSUBISHI MOTORS CORP; MITSUBISHI ELECTRIC CORP; MIKUNI KOGYO KK

TI - (A)
FUEL SUPPLY **SYSTEM** FOR INTERNAL COMBUSTION ENGINE

AB - (A)
PURPOSE: To simplify structure, **reduce** cost, and promote utility by adopting a metering **system** to **control injection** discharge as **well** as a **system** to **inject** fuel continuously to a collected part of suction pipes for simplifying functions.
CONSTITUTION: To solenoid valves S1-S4 equipped in a fuel inflow chamber 20 of a metering **valve** 11, a **regulation** operation signal is added from a computer 19 provided to an engine. To the computer 19, an FM signal of a value of suction air discharge output from an air **flow** sensor 28 provided to a suction pipe 7 is input together with electric signals of engine operation factors other than the suction air discharge, for example, the temperature of cooling water, the engine output, accelerated and decelerated speeds, the composition of exhaust **gas**, and others from a sensor 29. In this **system**, the computer 19 is used to provide **regulations** adapted for each operating state for supplying proper air-fuel mixture stably.

98/115 © EPODOC / EPO

PN - [JPH06288267](#) A 19941011
PR - JP19930077217 19930402
AP - JP19930077217 19930402
DT - I
FI - F02D19/02&F; F02D29/04&E; F02D41/14&310M; F02D45/00&362J; F02M21/02&301F;
F02M21/02&311E; F02M21/02&311G; F02M21/02&311H
FT - 3G084/AA04; 3G084/AA05; 3G084/AA06; 3G084/BA09; 3G084/BA11; 3G084/BA13;
3G084/DA02; 3G084/DA10; 3G084/DA13; 3G084/DA14; 3G084/EA00; 3G084/EB12;
3G084/FA10; 3G084/FA34; 3G092/AA01; 3G092/AA05; 3G092/AA09; 3G092/AB06;
3G092/BA06; 3G092/BB01; 3G092/DE11S; 3G092/DF03; 3G092/DF08; 3G092/DG08;
3G092/DG09; 3G092/EA02; 3G092/EA07; 3G092/EA09; 3G092/EB01; 3G092/EB04;
3G092/EC01; 3G092/FA13; 3G092/FA17; 3G092/FA24; 3G092/FA49; 3G092/FA50;
3G092/HA06Z; 3G092/HE01Z; 3G092/HE02Z; 3G093/AA12; 3G093/AB00; 3G093/BA17;
3G093/BA20; 3G093/BA28; 3G093/DA01; 3G093/DA06; 3G093/DA14; 3G093/EA04;
3G093/EA05; 3G093/EC02; 3G093/EC04; 3G093/FA01; 3G093/FA04; 3G301/HA22;
3G301/JA20; 3G301/JA25; 3G301/MA01; 3G301/NA08; 3G301/NB03; 3G301/ND01;
3G301/NE15; 3G301/NE17; 3G301/NE19; 3G301/NE23; 3G301/PA11Z; 3G301/PE02A;
3G384/AA01; 3G384/AA09; 3G384/AA14; 3G384/AA23; 3G384/BA12; 3G384/DA14;
3G384/DA20; 3G384/DA26; 3G384/DA49; 3G384/EA01; 3G384/EC05; 3G384/EC11;
3G384/ED07; 3G384/EG01; 3G384/FA04Z; 3G384/FA57Z
PA - TOKYO GAS CO LTD
TI - AIR-FUEL RATIO **CONTROL METHOD OF GAS ENGINE**
AB - PURPOSE:To **reduce** the cost and to improve the reliability by finding the variation of
the rotation frequency from the output of a rotation frequency sensor set to a **gas**
engine, and feedback **controlling** a **flow** rate **regulating** means of the fuel **gas**.
CONSTITUTION:A **flow** rate **regulating** means 5 composed of a motor-operated **valve** or
an **injector** is set in a fuel **gas** passage 3. A rotation frequency sensor 10 is set in a **gas**
engine 1, its output part is connected to the input part of a **control** device 9, and the
variation of the rotation frequency is found. This rotation frequency variation is found
as the standard deflection of the rotation frequency output by measuring numerous
rounds in a specific time by the sensor 10. The **flow** rate **regulating** means 5 of the
fuel **gas** is feedback **controlled** to maintain the above rotation frequency variation
within a preset tolerable value. By utilizing the corresponding relation of the rotation
frequency variation and the air-fuel ratio of the engine, the air-fuel ratio is **controlled**.
Consequently, the durability and the reliability are improved as **well** as the cost can
be **reduced**.

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PN - [JPH06288265](#) A 19941011
PR - JP19930077215 19930402
AP - JP19930077215 19930402
DT - I
FI - F02D19/02&F; F02D29/04&E; F02M21/02&301C; F02M21/02&301D; F02M21/02&301F;
F02M21/02&311E; F02M21/02&311G

FT - 3G092/AA01; 3G092/AA05; 3G092/AA09; 3G092/AB06; 3G092/AC07; 3G092/BA06; 3G092/BB01; 3G092/DE11S; 3G092/DF03; 3G092/DF08; 3G092/DG07; 3G092/EA07; 3G092/EA09; 3G092/EA23; 3G092/EB01; 3G092/EC01; 3G092/EC09; 3G092/FA13; 3G092/FA17; 3G092/FA24; 3G092/FA49; 3G092/FA50; 3G092/HA06Z; 3G092/HCO4X; 3G092/HE00Z; 3G092/HE01Z; 3G093/AA12; 3G093/AB00; 3G093/BA17; 3G093/BA20; 3G093/BA28; 3G093/DA00; 3G093/DA01; 3G093/DA06; 3G093/DA08; 3G093/DA14; 3G093/EA04; 3G093/EA05; 3G093/FA04; 3G093/FA10

PA - TOKYO GAS CO LTD

TI - AIR-FUEL RATIO **CONTROL METHOD** AND DEVICE FOR **GAS** ENGINE

AB - PURPOSE:To improve the durability and the reliability as **well** as to **reduce** the cost, by providing a vibration sensor to a **gas** engine so as to calculate the vibration fluctuation coefficient, and feedback- **controlling** a **flow** rate **regulat** ing means of the fuel **gas**.
CONSTITUTION:A vibration sensor 12 is provided to a **gas** engine, and the vibration fluctuation coefficient is calculated from the output of the vibration sensor 12. In a fuel **gas** passage 3, a **flow** rate **regulating** means 5 composed of a motor-operated **valve** or an **injector** is provided. An opening sensor 10 of a throttle **valve** is provided to a mixer 2. A rotation frequency sensor 11 is provided to a **gas** engine 1. A **control** device 9 calculates the engine output from the corresponding relation of the engine rotation frequency and the opening of the throttle **valve** obtained from the sensors 10 to 12, and the **flow** rate **regulating** signal of the **flow** rate **regulating** means 5, so as to calculate the tolerable vibration fluctuation coefficient. And the **control** device 9 feedback- **controls** the opening of the **flow** rate **regulating** means to make the vibration fluctuation coefficient to the tolerable vibration fluctuation coefficient. By such a way, the cost is **reduced**, and the durability and the reliability can be increased.

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PN - [JPS60195368](#) A 19851003

PNFP - JPH0567780B B2 19930927

PR - JP19840051597 19840317

AP - JP19840051597 19840317

DT - **

CCI - [F02B19/165](#) ; [F02D41/005](#)

CCA - [Y02T10/125](#) ; [Y02T10/47](#) ; [F02B3/06](#)

FI - F02M25/07&550A; F02M25/07&570D; F02M26/00&311

FT - 3G062/AA01; 3G062/AA08; 3G062/BA02; 3G062/BA05; 3G062/DA00; 3G062/DA01; 3G062/DA02; 3G062/EA08; 3G062/EB16; 3G062/FA04; 3G062/FA06; 3G062/FA25; 3G062/GA04; 3G062/GA06; 3G062/GA08; 3G062/GA13; 3G062/GA21

PA - (A B2)
MAZDA MOTOR

TI - (A)
EXHAUST **GAS** CIRCULATION **CONTROL** DEVICE IN VORTEX CHAMBER TYPE DIESEL ENGINE

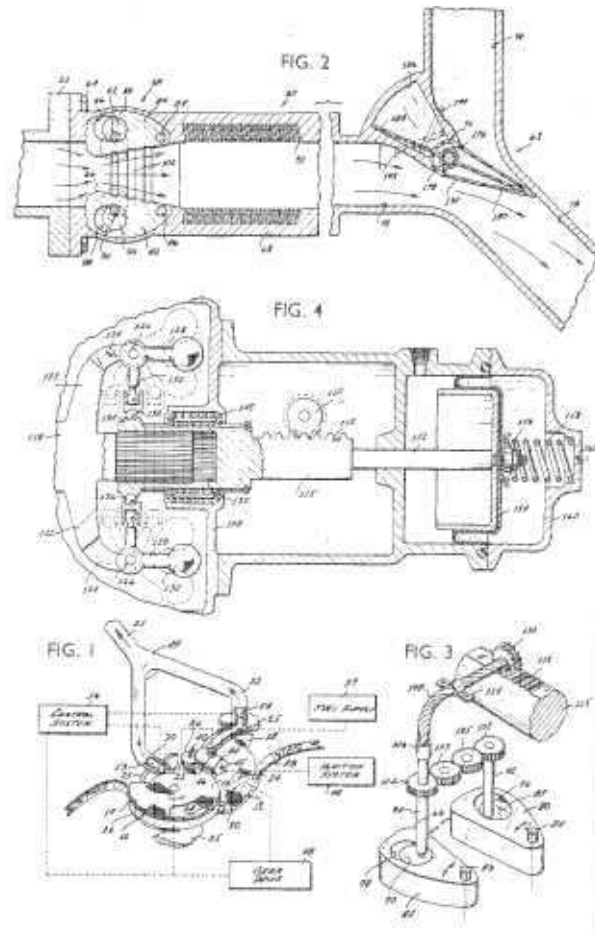
AB - (A)
PURPOSE:To simultaneously **reduce** both NOx components and particulates in exhaust **gas**, by returning and recirculating a part of exhaust **gas** into an intake-air **system** in accordance with the operating condition of an engine, and as **well**

by **controlling** the exhaust **gas** recirculation rate in a specified condition at the same time. CONSTITUTION: A **control** unit 100 delivers a fuel **injection** timing **control** signal Ct to a fuel **injection** timing **control valve** 25 and an exhaust **gas** recirculation **control** signal Ce to a vacuum **pressure control valve** 41 when the **control** unit 100 receives signals which indicate the operating condition of the engine. Further, when exhaust **gas** recirculation **control** is carried out in accordance with the **control** signal Ce, a vacuum supply port 42 is communicated with a vacuum port 43 and an atmospheric air suction port 46, alternately at a time rate in accordance with the duty ratio of the control signal Ce. The larger the duty ratio, the more the effective opening area of an exhaust **gas** recirculation port 32 increases so that the amount of exhaust **gas** recirculation increases. Meanwhile, the port 32 is closed when no signal Ce is delivered. Further, an optimum exhaust **gas** recirculation rate is set in the range of exhaust **gas** recirculation rate (EGR rate) in accordance with the operating condition of the engine, and when the signal Ce is issued, a large amount of exhaust **gas** is circulated upon relatively low load operation, but a small amount of exhaust **gas** is circulated upon relatively high load operation.

101/115	© EPODOC / EPO	.
PN	- JPS60195367 A 19851003	
PR	- JP19840051596 19840317	
AP	- JP19840051596 19840317	
DT	- I	
CT	- STSE (A) JP5888451 A 19830526 [] (NISSAN MOTOR); JP58092568B B 00000000 []	
CCI	- F02D21/08	
CCA	- F02B3/06 ; F02M26/57	
FI	- F02M25/07&550G; F02M25/07&570D; F02M26/00&311	
FT	- 3G062/AA01; 3G062/CA09; 3G062/DA02; 3G062/EA08; 3G062/EB16; 3G062/FA25; 3G062/GA00; 3G062/GA04; 3G062/GA06; 3G062/GA08; 3G062/GA13; 3G062/GA21; 3G062/GA31	
PA	- MAZDA MOTOR	
TI	- EXHAUST GAS CIRCULATION CONTROL DEVICE IN DIESEL ENGINE	
AB	- PURPOSE: To improve the running performance of an engine even upon speed change, particularly to improve the response and acceleration abilities of the engine, and as well to reduce the rate of black smoke, etc. contained in exhaust gas , by returning and recirculating exhaust gas into an intake-air system in accordance with the operating condition of the engine, and as well by rapidly restraining or stopping exhaust gas circulation. CONSTITUTION: A control unit 100 delivers a fuel injection timing control signal Ct to a valve 25 and an exhaust gas recirculation control signal Ce to a vacuum pressure control valve 41 in accordance with various detection signals which indicate the operating condition of the engine. Further, the range in which exhaust gas recirculation is carried out is limited to a range in which an accelerator is depressed in a certain amount and the rotational speed of the engine has a certain value. Further upon exhaust gas recirculation a vacuum supply port 42 is communicated with a vacuum port 43 and an atmospheric air suction port 46,	

alternately at a time rate in accordance with the duty ratio of the signal Ce. The larger the duty ratio, the more the effective opening area of a port 32 increases so that the amount of exhaust **gas** recirculation increases. Meanwhile, in a speed shift phase by a speed change gear unit exhaust **gas** recirculation is forced to be stopped for a predetermined period.

102/115 © EPODOC / EPO
 PN - [GB1280585](#) A 19720705
 PR - GB19700051664 19701030
 AP - GB19700051664 19701030
 DT - *
 CCI - [F02B27/06](#) ; [F02B53/00](#)
 CCA - [F02B2730/05](#) ; [F02B2730/09](#) ;
[Y02T10/146](#) ; [Y02T10/17](#)
 PA - K M F DEV CORP [US]
 TI - INTERNAL-COMBUSTION ENGINE
 EXHAUST **SYSTEM**
 AB - 1280585 Rotary-piston engine
 KMF DEVELOPMENT CORP 30 Oct
 1970 51664/70 Heading F1F To
 ensure complete scavenging of
 spent combustion gases from a
 rotary piston I. C. engine of the
 type in which a pair of
 intermeshed rotors, 10, 12
 mounted for rotation about
 perpendicular axes 22, 24 in a
 housing 25 and having
 peripheral lobes 14, 16 and 18,
 20 alternatively functioning both
 as pistons and as cylinder heads
 during the combustion cycle
 such that each intake charge of
 air is carried in a cavity 34
 between the lobes 14, 16 for
 compression at the meshing
 intersection of the rotors 10, 12
 from where it is forced into a
 combustion chamber 44, fuel
 being **injected** therein from a
 supply 37 and ignited by a pair
 of sparking- plugs 45 so that the
 resulting combustion acts within
 and on the housing 25; a side
 surface of the rotor 10 (on which
 it has no driving effect); and a
 radial end surface of the rotor



12 which accordingly acts as a piston and is rotatably driven to provide output drive via a gear drive 48, the piston/cylinder head roles of the rotors 10, 12 alternatively changing during intermesh thereof to provide output drive from both rotors 10, 12 via the gear drive 48, each rotor exhausts via ports 30, 32 which merge at a junction 49 to exhaust via a tailpipe 51, the exhaust ports each being formed with a variable convergent-divergent orifice nozzle 58, centrifugally **controlled** according to engine speed, which may be used singly, or in conjunction with a vane- **valve** 174 forming a closure **valve**-convergent-divergent orifice at the junction 62, the convergent-divergent orifices serving in known manner to accelerate the exhaust gases from the combustion chamber whereby the exiting gases produce a vacuum in the chamber ready for re-charging with air for the next cycle. The variable convergent-divergent orifice nozzles 58 each include a pair of opposed facing throat members 80, 82 pivoted at 84, 86 and equally pivotally adjusted to vary the throat 66 by a pair of eccentrics 88, 90, arranged in elongated slots 96, 98, and driven by shafts 92, 94 from a rack 115, Figs.3 and 4, axially moved in response to the outward centrifugal movement of weighted bell-crank levers 128 carried by a shaft 118 driven from the gear drive 48 of the engine, centrifugal movement of the rack 115 being opposed by a coil spring 158 adjacent a flexible-rolling- diaphragm 154 to dampen oscillations of the

rack. The position of the **control** vane 180 of the **valve** 174 is **controlled** by a panel 184 contained in a chamber 186 provided to accommodate a swinging motion by the panel 184 concurrent with the vane 180 movement, the opposed sides of the chamber 186 being vented oppositely to the passages 72, 74 by ducts 192, 194 respectively, so that when the vane 180 is urged upwardly by exhaust **flow** from passage 72, a partial vacuum occurs in the passage 74 which vacuum is supplied to the lower side of panel 184 through duct 194 to additionally hold the **valve** in its upper position, and viceversa when the exhaust **flow** is subsequently from the passage 74. The exhaust ports are additionally provided, after the converging-diverging nozzle section 58, with a section 60 containing somewhat canted annular internal circumferential slots functioning somewhat in the manner of the **well** known Maxim firearm silencer to avoid a rapid re-entry of air upon creation of the vacuum and thus **reduce** the shock wave of **gas flow** through the exhaust port structure.

PN - [GB757986](#) A 19560926

PR - GB19520020140 19520811

AP - GB19520020140 19520811

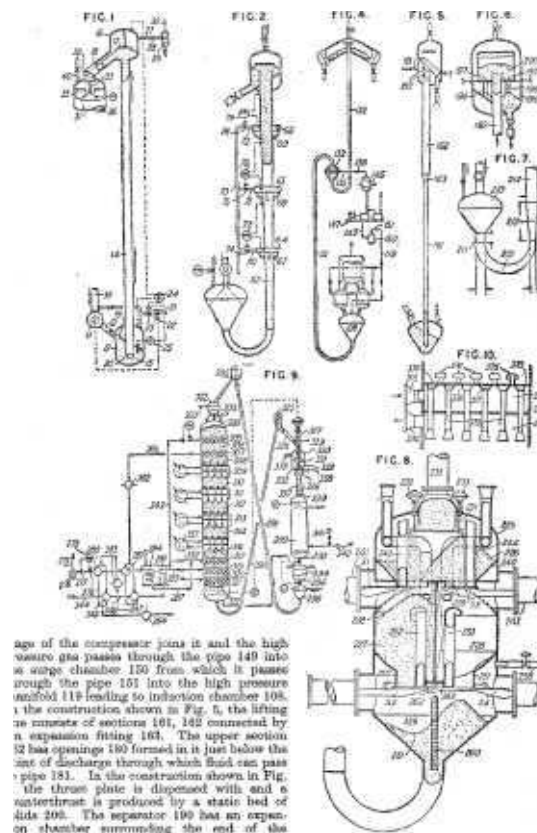
DT - *

CCI - [B01J8/189](#) ; [B01J8/0025](#)

PA - UNION OIL CO

TI - Improvements in or relating to conveyance of granular solids

AB - <PICT:0757986/III/1> <PICT:0757986/III/2> <PICT:0757986/III/3> <PICT:0757986/III/4> <PICT:0757986/III/5> <PICT:0757986/III/6> <PICT:0757986/III/7> <PICT:0757986/III/8> A process for the treatment of a feed fluid with a granular solid comprises contacting the fluid with a moving stream of solid in a contacting zone, withdrawing the solid from one part of the zone, and transferring it to another part through a conveyance zone, through which it would not **flow** under the influence of gravity alone, by a **method** which comprises passing a conveyance fluid through a substantially compact bed of solids in the conveyance zone at a velocity sufficient to counteract forces of gravity and friction forces of inner conveyance zone surfaces on the solid particles and moving the compact bed of solids while applying a compacting force to the solids discharging from the outlet of the conveyance zone to maintain the solids in the zone, as **well** as those at the outlet, at a bulk density substantially equal to the static bulk density of the solids when at rest and thus preventing the solids from fluidization in the conveyance



fluid. The process may be used for moving catalysts in catalytic cracking, hydrogenation, hydrodesulfurization, oxidation and other known catalytic processes, the conveyance of sand from tarsand retorting processes, movement of ores and coal in metallurgical operations or handling granular solids in industrial and agricultural operations. Fig. 1 shows an apparatus for the conveyance of granular adsorbent charcoal from the bottom to the top of a selective adsorption column. The charcoal flows through pipe 10, pressuring means 11 and pipe 12 into a cylindrical vessel 13 forming the induction zone at the foot of the lift line 14. The pressuring means 11 is designed to allow the passage of charcoal from a region at low **pressure** to one at high **pressure** without a reverse **flow of gas**. The end of the lift line 14 extends into the charcoal 15 and has a **reduced** part 20 for restricting the entry of the material. The lifting **gas** enters the vessel 13 through a pipe 21 **controlled** by valves 22, 23, the latter of which may be actuated either by differential **pressure** recorder **controller** 24 in accordance with the differential **pressure** across the lift line or by the adsorbent level **controller** 25 in accordance with the level 19 of the charcoal. The lift line terminates at its upper end in a separator 16 containing a thrust plate 17. This plate maintains the charcoal in a substantially compact state and prevents fluidization. Lifting **gas** is disengaged from the charcoal and discharged

through a pipe 27 **controlled** by **valve** 28 to a separator 29 where charcoal fines are removed. The **gas** then passes through the pipe 30 to a compressor where its **pressure** is raised before reintroduction into the vessel 13. Alternatively, the **gas** passes from the separator through the outlet 18 containing charcoal into the upper part of adsorption column 31. The downwardly moving charcoal is directed by a baffle 32 into a tube 33 which passes into the central aperture of an elutriation tray 35. The charcoal here meets the upwardlyflowing purge **gas** and the fines are carried away by it through the pipe 40. The particles having the desired size range accumulate in the storage zone 36. The expansion of the lifting **gas** which occurs in the lift line is counteracted by increasing the cross-sectional area of the line 52, Fig. 2, in the direction of **flow**. Supplemental conveying fluid is supplied to ring manifolds 64, 65, 66 which communicate with the line 52 by pipes 67, 68, 69. The supply of fluid to the rings through inlets 70, 71, 72 from a manifold 73 is **regulated** by valves 74, 75, 76 which are **controlled** by differential **pressure controllers** 77, 78 79. Each **controller** is actuated by the **pressure** differential existing through a zone adjacent the point of introduction of the fluid. The expansion of the **gas** may be counteracted also by removal of a part of it at the chamber 133, Fig. 4, connecting the lower and upper parts 131, 132 of the lifting line. This chamber has a

transverse disengaging tray from which a part of the fluid is removed through the pipe 135 **controlled** by **valve** 136.

The **gas** passes from this pipe to a cooler and dust remover 145 from which it passes to an interstage of a multi-stage compressor 147. Here **gas** from the first stage of the compressor joins it and the high **pressure gas** passes through the pipe 149 into the surge chamber 150 from which it passes through the pipe 151 into the high **pressure** manifold 119 leading to induction chamber 108. In the construction shown in Fig. 5, the lifting line consists of sections 161, 162 connected by an expansion fitting 163. The upper section 162 has openings 180 formed in it just below the point of discharge through which fluid can pass to a pipe 181. In the construction shown in Fig. 6, the thrust plate is dispensed with and a counterthrust is produced by a static bed of solids 200. The separator 190 has an expansion chamber surrounding the end of the lifting line 193. Variable orifices 197 **control** the discharge through the pipes 196. The induction chamber 210, Fig. 7, is connected to the lifting pipe 214 by a U-shaped pipe 212 of diminishing cross-section and a pipe 213 of increasing cross-section. Between the chamber and the pipe 212 is a short pipe 211, the length of which is at least equal to its diameter and preferably is not greater than five diameters. A form of pressuring device shown in Fig. 8 consists of a vessel 225 provided with an upper surge chamber 226, primary

pressuring chamber 227, secondary pressuring chamber 228 and a lower surge chamber 229. Solids pass through pipe 230 on to a movable plate 231 in the chamber 226 over which they **flow**. The plate is raised and lowered automatically by means 232, 233 actuated in accordance with a **flow control** instrument. A sloping baffle 240 leads the solids to outlets 238, 239 which open into chamber 227, 228 and are opened and closed by slide valves S1, S3. These valves are actuated by pneumatic cylinders 241, 242 so that one is open when the other is closed. The outlets 250, 251 from the chamber 227, 228 are **controlled** by valves S2, S4 actuated similarly to the valves S1, S3 but timed so that the valves S2, S4 are open when the valves S1, S3 are closed. **Gas** risers 243, 244, 252, 253 are provided within the outlets to allow sufficient **gas** to **flow** to equalize any small **pressure** differences between the chambers. High **pressure** conveyance fluid is introduced into the chamber 229 through the pipe 258. The level 261 of the solids in this chamber is measured by grid work 260 depending from a horizontal bar 262 which is attached at right angles to a tube capable of supporting a torsional stress and contained in a tubular housing 263. The movement of the torsion tube actuates the level **controller**. Apparatus for the circulation of catalyst in a hydrocarbon conversion process is shown in Fig. 9. Naphtha supplied through pipe 275 is pumped through pipe 277 by a pump 276 which raises

its **pressure** to 490 lbs. per square inch. The rate of **flow** through pipe 277 is **controlled** by **valve** 278 in accordance with **flow** recorder **controller** 279. The naphtha passes to a heat exchanger 280 where its temperature is raised by the effluent from the reactor to 300 DEG F. It then passes to a second heat exchanger 282 in which it is heated to 475 DEG F. and then passes to a vaporizing coil 284. The vapour passes through the pipe 287 and is **injected** into the reactor column 288. Cobalt molybdate moves downwards by gravity as a continuous compact unfluidized bed in the reactor 288 and regenerator 289 and is carried through the connecting pipes 290, 291 by fluid. Regenerated catalyst passes out of the regenerator through pipe 292 into pressuring chamber 294 where the **pressure** is raised from 318 to 575 lbs. per square inch by steam. The pressured solid then flows through pipe 296 into regenerated catalyst induction zone 298 where more steam is supplied. The steam and catalyst pass up through the pipe 291 into chamber 300 where resistance is applied to the **flow** of solids from the pipe 291 to maintain them during conveyance in substantially compact and unfluidized form at the same density as the solids flowing in column 289. The regenerated catalyst and steam pass into separator zone 302 where part of the steam is removed through pipe 303. The catalyst and the remainder of the steam pass through a series of pipes 304 into the top of reaction vessel 288 down which

the catalyst passes by gravity as a compact unfluidized moving bed through **reduction gas** engaging zone 305, catalyst **reduction** zone 306, reactor effluent disengaging zone 307, reaction zones 308, 310, 312, 314, 316, sealing and vapour disengaging and engaging zone 309, 311, 313 and then through reactor feed engaging zone 317, recycle gasengaging zone 319, catalyst stripping zone 320 and stripping **gas** engaging zone 321 to a reciprocating feeder 322. The catalyst passes from the bottom of the reactor 288 through the pipe 290 to a reversing chamber 325 from which it descends through the pipe 326 to a **flow control valve** superstructure 327 leading to a chamber 330. This chamber contains a funnel 331 through which the catalyst flows. The **valve** stem 329 passes through the funnel and carries a plate 332 which can close the outlet 333. Part of the depressured conveying fluid passes out through the pipe 335. The catalyst falls as a shower in uncompacted form through elutriation zone 337, the lower end of which is at a higher **pressure** than the zone 336. Catalyst fines are swept out in suspension through the pipe 338. The elutriated spent catalyst passes through pipe 339 into regeneration vessel 289 to which flue **gas** and air are admitted through pipes 341, 342 and the deactivating deposit is burned. Recycle **gas** containing 65 per cent of hydrogen

PN - [GB337380](#) A 19301029

PR - GB19290020060 19290629

AP - GB19290020060 19290629

DT - *

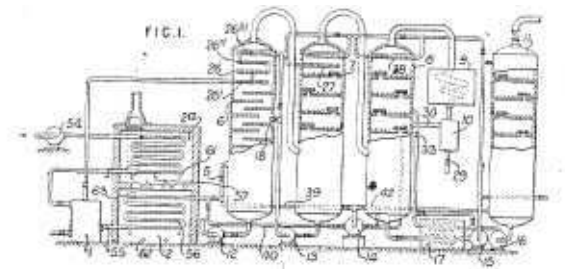
CCI - [C10G9/14](#) ; [C10G9/00](#)

IDT - 23B5B6

PA - PANHANDLE REFINING CO

TI - Improvements in cracking hydrocarbon oils

AB - 337,380. Triggs, W. W., (Panhandle Refining Co.). June 29, 1929. Hydrocarbons, cracking.-In a process for , cracking oils under **reduced pressure**, the oils are heated in a primary heating zone under suitable **pressure** at or above atmospheric and are then admitted to a flashing zone maintained under sub-atmospheric **pressure**, and the resulting vapours are passed to a cracking zone also under sub-atmospheric **pressure**. The crude **oil** is initially forced by a pump 54 through a preheating coil 57 into a flash pot 1 maintained at about 12-14 lbs. absolute **pressure** where the **oil** is vapourized and the vapours are passed through a cracking coil 56 at 1000-1200 and about 6-14 lbs. **pressure**. The cracked vapours pass through a separating tower 6 and bubble towers 7, 8 where their temperature is **controlled** by contact with cooling coils 26, 26<1>, 26<11>, 26<111>, 27, 28 through which the condensate from the towers 7, 8 is forced by pumps 13, 15 respectively. Condensate from the tower 7 can also be **injected** into the tower 6 through a **valve** 18. The vapours from the tower 8 pass through a condenser 9 to a separator 10



from which condensate is withdrawn through a **valve** 29. The vacuum in the various parts of the **system** is determined by a pump 14 which withdraws vapours from the cracking zone through a line 40 and pumps them to the tower 6 through a line 39 or withdraws gases and uncondensed vapours from the separator 10 through a line 30 and pumps them through a line 42 to an absorption tower 11 supplied with washing liquid in the form of condensate withdrawn from the bottom of the tower 8. The condensate collecting at the bottom of the tower 11 is pumped by a pump 16 through a heat exchanger 17 and **valve** 33 into the middle of the tower 8. Burners 61 are provided in the upper portion of the furnace 2 as **well** as burners 62 in the lower zone, the burners' 61 being turned down after the plant is on **flow**, the coil 57 then being heated by waste gases of combustion passing through the perforations 63. In another construction the coils 56, 57 are arranged side by side and are separated by a wall. The burners 62 may be placed in arched side extensions of the zone 2 to avoid overheating the coil 56.

PN - [GB765140](#) A 19570102

PR - CHX765140 19540128

AP - GB19550002036 19550124

DT - *

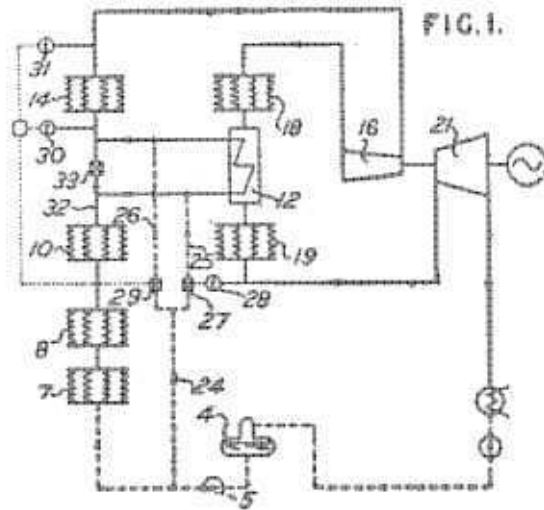
CCI - [F01K7/22](#)

PA - SULZER AG

TI - Steam power plants with intermediate reheaters

AB - 765,140. Steam power plant. SULZER FRERES SOC. ANON. Jan. 24, 1955 [Jan. 28, 1954], No. 2036/55. Classes 110 (3) and 122 (3). [Also in Group XIII]

A **method** of **regulating** the intermediate reheating in a steam power plant having between two expansion stages an intermediate re-heater directly heated in the steam generator and a heat exchanger through one side of which passes at least some of the partially expanded steam and through the other side of which passes some not yet expanded steam, which comprises so **controlling** the operation of the heat exchanger that if the partially expanded steam is too cool additional heat is added to it in the heat exchanger and if too hot, heat is withdrawn therein. Feed water from the hot **well** 4 is fed by a pump 5 to the flue **gas** economizer 7 and boiler 8 where it is converted into steam. The steam is superheated in a first superheater 10 and then flows through one side of a heat exchanger 12 into a second superheater 14 from which it is led to a high-**pressure** turbine 16. After expansion in the turbine 16 the steam passes into the first part 18 of an intermediate reheater, then



through the other side of the heat exchanger 12 into the second part 19 of the intermediate reheater from which it is led to a lowpressure turbine 21. The two parts 18, 19 of the intermediate reheater are directly heated in the furnace of the steam generator. Feed water is led through a pipe 24 to pipes 25, 26 **controlled** by valves 27, 29 which **inject** water into the not yet expanded steam before and after the heat exchanger 12. The **valve** 27 is automatically **controlled** by a **regulator** 28 in response to variations of temperature of the partially expanded steam leaving the heat exchanger 12. The **valve** 29 is automatically **controlled** by **regulators** 30, 31 responsive to the temperatures before and after the second superheater 14. A by-pass pipe 32 containing a throttle device 33 is arranged to pass some of the not expanded steam round the heat exchanger 12. The throttle device 33 can be a simple orifice diaphragm or a manually or automatically adjustable **valve**. A by-pass, including a throttle **valve**, around the other side of the heat exchanger 12 may also be provided. The **control** of the **valve** 27 is such that when the heat given to the partially expanded steam in the intermediate reheater 18, 19 is sufficient to maintain the desired reheat temperature, sufficient water is **injected** through the pipe 25 that no heat transfer takes place in the heat exchanger 12. When the heat supply in the intermediate reheater is insufficient, the amount of

water **injected** is **reduced** and heat is transferred from the not yet expanded steam to the partially expanded steam. When the heat supply is excessive, the amount of water **injected** is increased and heat is transferred from the partially expanded steam to the not yet expanded steam. The heat exchanger 12 may be arranged before or after a one-part intermediate reheater. When there is more than one stage of intermediate reheating, it is advantageous to connect the sides of the heat exchangers 12 through which the not yet expanded steam passes in parallel and to provide an individual water **injector** for each. Alternatively, the steam temperature in only one of the reheaters could be **controlled** as described and the others **regulated** in some other way.

PN - [FR2783557](#) A1 20000324

PNFP - FR2783557 B1 20001020

PR - FR19980011728 19980921

AP - FR19980011728 19980921

DT - *; Rep

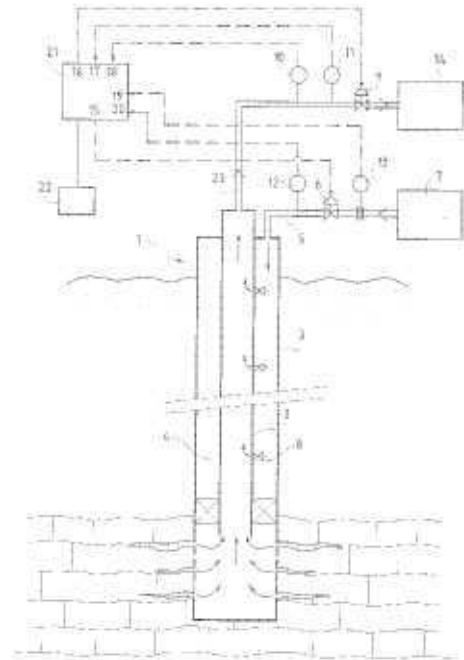
CT - || STSE (A1)
[GB2252797](#) A 19920819
 [AD] (ELF AQUITAINE [FR])
 [AD] 1
 * abstract *;
[EP0756065](#) A1 19970129
 [A] (SHELL INT RESEARCH [NL])
 [A] 1
 * column 3, line 18 - line 40 *
 * column 4, line 3 - line 21 *;
[GB2276675](#) A 19941005
 [A] (PEARSON ROBERT COLIN [GB])
 [A] 1
 * abstract *

CCI - [E21B43/122](#)

PA - (A1 B1)
 ELF EXPLORATION PROD [FR]

TI - (A1)
Method for **controlling** a liquid and gaseous hydrocarbon production **well** using **injection gas** involves using outlet choke and **injection gas control valve** to **control** start up phase, that initiates and ramps up production, and production phase

AB - (A1)
 The **method** has a **well** (1) fitted with an adjustable-aperture outlet choke (9) into which **gas**, the **flow** rate of which can be adjusted by a **control valve** (6), is **injected**. The **method** comprises a start up phase that consists of a step for initiating the production of hydrocarbons and a step of ramping up production speed. A subsequent production phase uses the outlet choke and **control valve** to



maintain stability of the **flow** rate. The **method** involves the step of initiating the production of hydrocarbons by comparing the **pressure** downstream of a **control valve**, that connects an annular space formed by a casing inside a production string to a source of pressurized **gas**, with two predetermined thresholds PCH1 and PCH2, with PCH2 being higher than PCH1. If this **pressure** is below the threshold PCH1 then the **control valve** is opened so as to **inject gas** into the annular space at a predetermined **flow** rate Q1 and if the **pressure** is between the thresholds then the **control valve** is opened to **inject gas** at a **flow** rate Q2, which is higher than Q1. When the **pressure** reaches the threshold PCH2 the **flow** rate of the **gas injected** into the annular space is adjusted to a predetermined value Q3 which is also higher than Q1. An adjustable-aperture outlet choke fitted to the outlet pipe is gradually adjusted so as to achieve a minimum produced-hydrocarbons **flow** rate. The production speed is then ramped up to a production speed by comparing the produced-hydrocarbons **flow** rate with a predetermined threshold T1 and, if the **flow** rate exceeds the threshold continuously for a predetermined length of time D1, the aperture of the choke is increased to a predetermined value, and if not the comparison is repeated. A predetermined length of time is left to allow the minimum hydrocarbons **flow** rate to become established after which the produced-hydrocarbons **flow** rate with a

threshold T2 which is higher than T1 and comparing the **pressure** upstream of the choke with a predetermined **pressure** P1 and, if the **flow** rate and the **pressure** simultaneously exceed the thresholds continuously for a length of time D1 then the start-up phase is finished while if they do not then the comparison is repeated. Preferred Features: The step of ramping up the speed in the start up phase additionally consists of periodically calculating the derivative with respect to time of the **pressure** downstream of the **control valve** and comparing the derivative with a predetermined negative threshold and with a predetermined positive threshold. The **injected gas flow** rate is increased or decreased by a predetermined amount if the derivative of **pressure** is below the negative threshold or above the positive threshold, respectively. The start up phase is followed by a production phase which involves comparing the produced-hydrocarbon **flow** rate with four predetermined thresholds SR1, SR2, SR3 and SR4, where SR is higher than SR1 and SR4 is higher than SR3. If the production **flow** rate is below SR1 and if the **injected gas flow** rate is below a predetermined threshold then the **flow** rate is increased by a predetermined amount and if the production **flow** rate is above SR2 and if the **injected gas flow** rate is above a predetermined threshold then the **flow** rate is decreased by a predetermined amount. If the production **flow** rate is below SR3 and if the aperture of the choke is below a

predetermined threshold then the aperture of the choke is **reduced** by a predetermined amount while if the production **flow** rate is above SR4 and if the aperture of the choke is above a predetermined threshold then the aperture is **reduced** by a predetermined threshold. This comparison is repeated and the produced hydrocarbons-production **flow** rate is compared with a predetermined threshold and, if the **flow** rate is below the threshold, the start up phase is resumed. The production phase also consists of periodically calculating the derivative with respect to time of the **pressure** downstream of the **control valve** and comparing the derivative with a predetermined negative threshold and with a predetermined positive threshold, with the **injected gas flow** rate being increased or decreased if the derivative of the **pressure** is below the negative threshold or above the positive threshold, respectively. The produced-hydrocarbons **flow** rate is either measured using a **flow** meter mounted on the outlet pipe upstream of the outlet choke, estimated on the basis of measurement of the temperature of the produced hydrocarbons upstream of the outlet choke or estimated on the basis of the **pressure** difference across the outlet choke and the aperture of the choke

DT - *; Rep

CCI - [F02M55/001](#) ; [F02M57/02](#) ; [F02M57/023](#) ; [F02M59/366](#)

CCA - [F02M2200/04](#)

PA - BOSCH GMBH ROBERT [DE]

TI - Fuel **injection** pump for IC engine - has grooved piston for return **flow** at max. **pressure**

AB - The fuel **injection system** has a solenoid **valve** (5) in the low **pressure** feed to **control** the start and end of the **injection** cycle. A sloping bore (3) crosses the piston bore of the pump and the far end forms a return feed from the **pressure** chamber (10). The piston has a groove (8) which bridges the two parts of the sloping duct and forms a simple return path at max. pump **pressure**. The return path allows any **gas** bubbles to escape, as **well** as excess high **pressure** fuel. It prevents cavitation at the **injector** and **reduces** wear.

108/115 © EPODOC / EPO

PN - [CN2412090Y](#) Y 20001227

PR - CN1999247460U 19991210

AP - CN1999247460U 19991210

DT - I

PA - HEKOU EXTRACTION PLANT SHENGLI [CN]

TI - Prying-mounting hydraulic piston pump

AB - The utility model relates to a prying-mounting hydraulic piston pump, which belongs to the technology for increasing the **injection** of the water **injection** of an **oil** field of a petroleum industry **system**, especially suitable for the hyposmosis **oil** field development and water **injection** development which is affected by that an **injection oil** layer is blocked in a water **injection well**. The utility model is characterized in that the whole device is composed of a machine set, a high **pressure** manifold, a **flow control valve**, a metering meter, etc. The main devices are formed into prying-mounting structures. The utility model works by the **pressure** of the original water pipe. The utility model has the advantages of energy saving, investment saving, production cost **reduction**, easy moving, easy use, and labor intensity **reduction**.

109/115 © EPODOC / EPO

PN - [CN2625577Y](#) Y 20040714

PR - CN2003217843U 20030606

AP - CN2003217843U 20030606

DT - I

PA - OIL EXTRACTION TECHNOLOGY RES [CN]

TI - Automatic dispensing apparatus for microflow liquid

AB - The utility model discloses a micro **flow** liquid automatic distributing device used in **oil** industry which is suitable for water **injection** stations and **oil** extraction stations of **oil** industry to **inject** all kinds of chemical and chemical agents to the underground as **well** as the locations such as the one bump against a plurality of tanks of a chemical plant, etc, that needs to automatically distribute liquid according to need. The device is provided with a **controller** and an electromagnetic **valve**, wherein, the

electromagnetic **valve** is communicated with a liquid distributing resource and an **injection** inlet through pipelines and is connected with the **controller** through a **control** line. The time of the cross linking of the **system** can be effectually adjusted and the consistence of the cross linking agent and the time of addition of every **injection well** can be accurately distributed, thus perfectly meeting the needs of chemical **oil**-displacing of the **oil** field, improving the operating effect of chemical **oil**-displacing and **reducing** the production cost.

110/115 © EPODOC / EPO

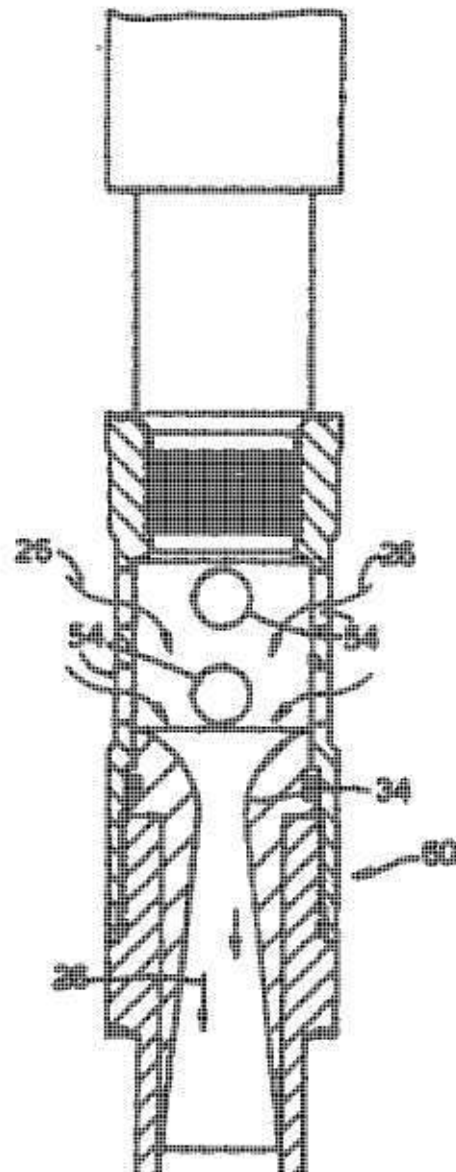
PN - [CN2580498Y](#) Y 20031015
 PR - CN2002284034U 20021101
 AP - CN2002284034U 20021101
 DT - I
 PA - MINGDE SCIENCE AND TECHNOLOGY [CN]
 TI - Automatic **regulator** for high **pressure** water **injection** of **oil** field single **well**
 AB - The utility model relates to an automatic **regulator** for high-**pressure** water **injection** of an **oil** field single **well**, which is composed of an intelligent **regulation** device 1, a direct current electric motor 2, a speed **reducer** 3, a plane double **flow regulation valve** 4, a **pressure** sensor 5 and a **flow** sensor 6, wherein a **valve** rod of the plane double **flow regulation valve** is connected with the output of the speed **reducer**, the input of the speed **reducer** is connected with the direct current electric motor, the **pressure** sensor and the **flow** sensor are installed on a pipeline which is adjacent to the plane double **flow** adjusting **valve**, and the direct current electric motor, the **pressure** sensor and the **flow** sensor are respectively connected with the intelligent **regulation** device through signal wires. The utility model can real time monitor the water **injection** working conditions of the high-**pressure** water **well** and has automatic closed-loop **regulation** according to the actual **pressure** and the **flow** rate. The utility model realizes continuous, accurate and stable water **injection**. The utility model not only fundamentally avoids back **flow** even sand interment and **oil** layer damage accident caused by high **pressure**, but also liberates workers from the dangerous high-**pressure** environment. The utility model can be used as a basic unit of a wireless intelligent surveillance network **system** of a future oilfield water **injection well**.

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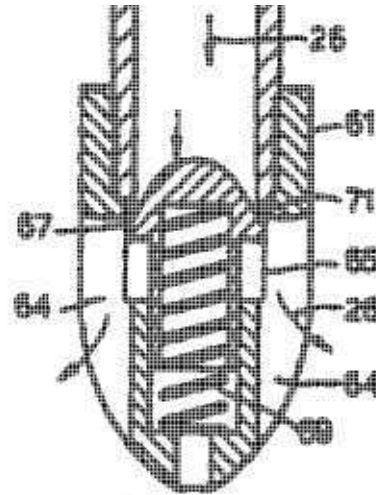
PN - [CN1465851](#) A 20040107
 PNFP - CN1217090C C 20050831
 PR - CN2002120856 20020606
 AP - CN2002120856 20020606
 DT - I
 PA - (A C)
 UNIV TIANJIN [CN]
 TI - (A C)
 Sequential ejection, rare combustion, fully electronic **controlled** diesel/natural **gas** dual-fuel engine
 AB - (A)

The device of **injection** hole for jetting natural **gas** in proper order is composed of the **injection** solenoid **valve** and the solenoid **valve** seat. The said device is installed at the air inlet of each cylinder of the engine. The proportion electro-magnet is installed at the **injection** pump with electronic **control system** being added. The **gas** path of natural **gas** consists of the high-**pressure** cylinder, the filter cleaner of natural **gas** and the **pressure reducing valve** of natural **gas**. The electronic **control system** includes the electronic **control** unit and the several sensors connected to the engine. The advantages of the invention are (1) simple modifying procedure, (2) discharge standard reaches Europe III, (3) high substitution rate of natural **gas**, (4) good acceleration and deceleration characteristics as **well** as steering ability, (5) timing **control**, definite quantity **control** for natural **gas**, and accuracy **control** for diesel **oil**, (6) high interference killing feature of the electronic **control** unit.

112/115 © EPODOC / EPO
 PN - [CA2175928](#) A1 19960314
 PNFP - CA2175928 C 20090707
 PR - US19940301661
 19940907; US19950434037
 19950502; WO1995GB02079
 19950904
 AP - CA19952175928 19950904
 DT - I
 CCI - [E21B43/123](#)
 PA - (A1)
 HALLIBURTON CO [US]
 TI - (A1 C)
 A **METHOD OF OPERATING A GAS**
LIFT FLOW CONTROL DEVICE
 AB - (A1)
 A **gas flow control** device (60)
 for **injecting gas** into a **downhole**
 production string for
 recovering **pressure**
 and **reducing** frictional losses,
 so that critical **flow** can be
 reached at lower **pressure** drops
 and higher production **pressure**,
 includes a housing, inlet ports
 (54), nose end (61) with
 check **valve** (65), and outlet ports
 (64), and a nozzle (34) having
 first and second ends, and a **flow**
 path therebetween, and a Venturi
 having first and second ends,
 and a **flow** path therebetween.
 The first end of the Venturi
 portion is disposed adjacent to



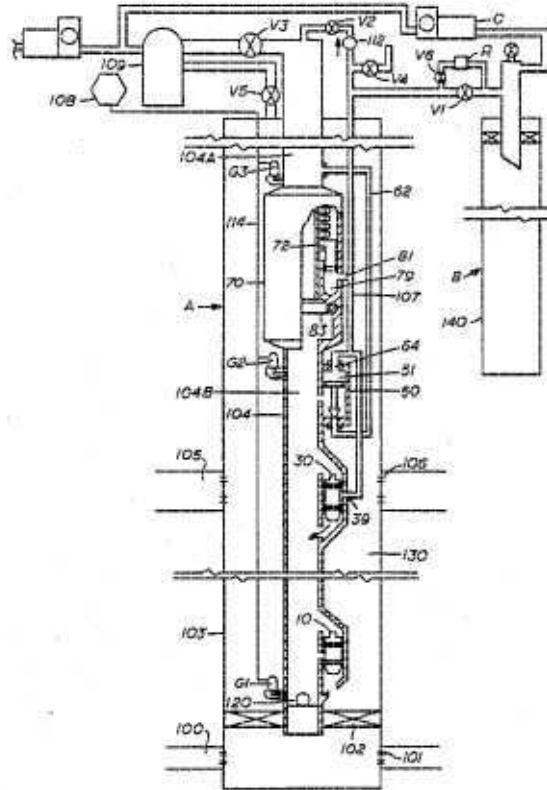
the second end of the nozzle. The Venturi **flow** path is coaxially aligned with the nozzle **flow** path to provide a continuous **flow** path therethrough. Such a **flow control** device that has a **gas flow** rate performance that is independent of the tubing **pressure**, even when the tubing **pressure** is as high as 80 % to 93 % of the casing **pressure**, can be used to increase the production rate, improve the lift efficiency, and eliminate or suppress instability in continuous-flow **gas lift wells**.



- (C)
A **gas flow control** device (60) for **injecting gas** into a **downhole** production string for recovering **pressure** and **reducing** frictional losses, so that critical **flow** can be reached at lower **pressure** drops and higher production **pressure**, includes a housing, inlet ports (54), nose end (61) with check **valve** (65), and outlet ports (64), and a nozzle (34) having first and second ends, and a **flow** path therebetween, and a Venturi having first and second ends, and a **flow** path therebetween. The first end of the Venturi portion is disposed adjacent to the second end of the nozzle. The Venturi **flow** path is coaxially aligned with the nozzle **flow** path to provide a continuous **flow** path therethrough. Such a **flow control** device that has a **gas flow** rate performance that is independent of the tubing **pressure**, even when the tubing **pressure** is as high as 80 % to 93 % of the casing **pressure**, can be used to increase the production rate, improve the lift efficiency, and eliminate or

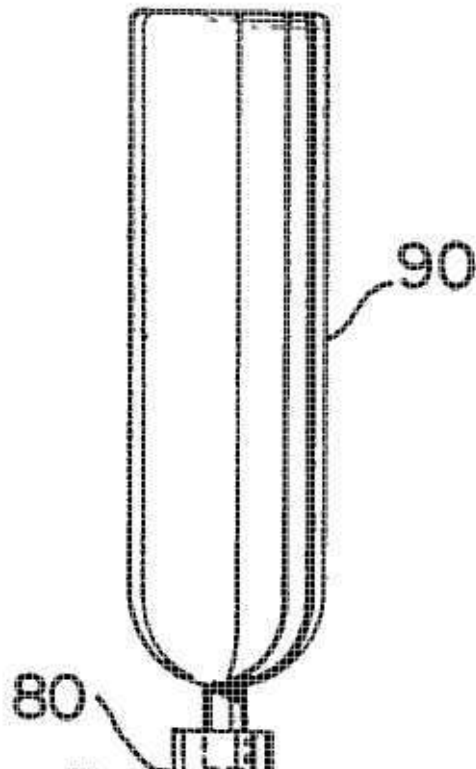
suppress instability in
continuous-flow **gas lift wells**.

- 113/115** © EPODOC / EPO
- PN - [CA1325380](#) C 19931221
- PR - US19880226264 19880729
- AP - CA19880582077 19881103
- DT - I
- CCI - [E21B34/101](#) ; [E21B34/10](#) ;
[E21B34/16](#) ; [E21B43/121](#) ;
[E21B43/122](#) ; [E21B43/123](#)
- CCA - [E21B2034/005](#)
- PA - ENHANCED GAS RECOVERY
COMPANY [US]
- TI - LIQUID REMOVAL **METHOD**,
SYSTEM AND APPARATUS FOR
HYDROCARBON
PRODUCING **WELLS**
- AB - A **method** and apparatus are
disclosed to detect periodic **well**
loading by produced
accumulated secondary fluids,
and accordingly to remove the
undesired secondary fluid from
the tubing of a hydrocarbon
producing **well**. The **method**
according to the present
invention employs a
surface **control system**
that **controls** the operation of the
fluid removal cycle, and the
production cycle of the
hydrocarbon producing **well**.
Periodically, the **well** is "shut-in"
and upper and lower **flow**
control valves, connected at a
predetermined depth to the **well**
tubing, are actuated to a closed
position to form an
accumulation chamber within
the tubing. The closed **flow**
control valves block off the fluid
in the accumulation chamber
formed in the lower portion of
the tubing string, which contains
the undesired accumulated
secondary fluids. A supply line is

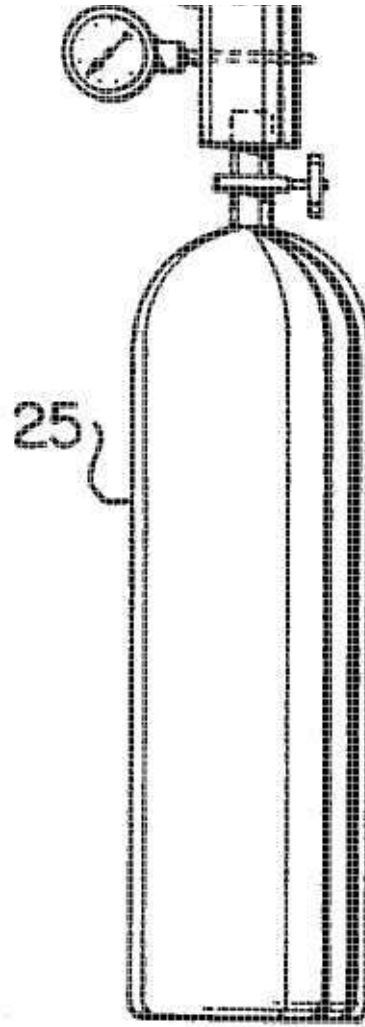


used to **inject** pressurized **gas** from the surface of the **well** into the accumulation chamber to provide the necessary **pressure** to force the accumulated secondary fluids, trapped in the accumulation chamber, through a relief **valve** and into the annulus of the **well** casing thereby removing the undesired secondary fluids from the **well** tubing. The **controller** then stops the **flow** of the **injected gas** to the supply line to stop the removal cycle. The supply line **pressure** is relieved, and the **pressure** across the **flow control** valves are equalized. The **flow control** valves are then opened and the producing **well** is returned to production with **reduced** back **pressure** due to the removal of the undesired, accumulated secondary fluids from the tubing.

- 114/115** © EPODOC / EPO
- PN - [CA1265990](#) A 19900220
- PR - GB19840025329
19841008; GB19840025330
19841008
- AP - CA19850491565 19850925
- DT - I
- CCI - [B01F3/04801](#)
- CCA - [Y10S261/07](#)
- PA - SUTHERLAND NEILK; SUTHERLAND
ALBERT J
- TI - DOMESTIC CARBONATOR
- AB - . This invention relates to a carbonating apparatus which is designed primarily for the domestic market, but not solely as it has a place in the commercial field of hotel bars and restaurants. A small carbonating apparatus used to carbonate various liquids (fruit juices, beer, wine, milk, water,

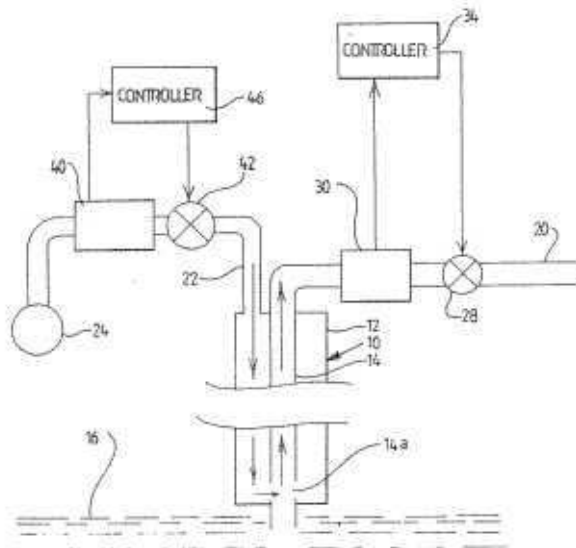


soft drinks and re-carbonate previously carbonated drinks, or to pressurize again bottles of carbonated drinks that were opened, to keep in good condition), has an outer casing or housing which connects to a cylinder of compressed carbon dioxide **gas**, and has located within a filter, two discs, drilled and grooved to combine together to form a **reduction valve**, drilled airways from the discs through a series of three pistons, the airways branch to the outside to include a **pressure gauge** and a **pressure relief valve**, which is only in communication with the **pressure** in the airways but can **control** the **pressure** within the sealed bottle and can in certain aspects of the invention be used as an indicator as to when the correct **pressure** has been reached in the bottle. A series of three pistons combine together to provide a means for a piston in conjunction with a spring to **control** the **pressure** within and close, a second to give final closing in the central position, and a third piston which is operated by the bottle, to pass into the non-return **valve** through the bottle cap, when depressed by the bottle activates the **gas flow** through and around the previously mentioned pistons. In a second aspect of the present invention an **injector** block replaces the **injector** piston end functions with a **pressure relief valve** to **control** the **pressure** in the bottle whilst not being in direct communication with the contents of the bottle, thus permitting a pre-mix **system** to be used. The insert in the bottle



cap provides a shoulder to keep the washer in place , a **well** or recess to accept and position an o-ring for sealing on the **injector**, and an non-return **valve**. The air is removed from the bottle by deforming and the further de-aeration by warming the contents of the bottle, The amount of liquid level in the bottle is of importance to allow the maximum amount to be carbonated at one time , and to provide maximum space in the bottle to receive CO2 to be agitated into the beverage. The sealed bottle **method** permits the bottled to be removed from the carbonator and to be agitated, to induce the beverage to absorb the CO2.

- 115/115** © EPODOC / EPO
- PN - [WO8800277](#) A1 19880114
- PR - AU1986PH06777 19860707
- AP - WO1987AU00201 19870707
- DT - *; Rep
- CT - |AU| ISR (A1)
[US2633086](#) A [X];
[US3028815](#) A [Y];
[US4267885](#) A [Y];
[US3362347](#) A [Y];
[US2634689](#) A [Y];
[US2679212](#) A [Y];
[US3191681](#) A [A]
- CCI - [E21B43/122](#)
- PA - BWN VORTOIL RIGHTS CO PTY LTD [AU]; FOXBORO PTY LTD [AU]
- TI - **METHOD FOR STARTUP OF PRODUCTION IN AN OIL WELL**
- AB - **Method** of startup of oil production in an **oil well** (16) in which **gas is injected** into **well** fluid to be recovered so as to facilitate lifting of the fluid. The **method** is characterised in that whilst inlet **flow** of the **gas**



is **controlled**, **valve** means (28) **controlling** fluid **flow** from the **well** (16) is progressively opened. Preferably the **flow** rate of fluid from the **well** (16) is monitored and the rate of opening of the **valve** means (28) is varied so as to **reduce** the rate of opening on detection of an increase in **flow** rate which is greater than a predetermined **flow** rate.

A **method of controlling oil** production is also provided wherein the **flow** rate of fluid from the **well** (16) is monitored and a **flow regulating** device (28) in the **flow** path from the **well** (16) is **controlled** in accordance with the monitored **flow** rate to **reduce** the **flow** rate when **flow** rate, as monitored, is indicative of onset slugging.