



New connection on: : 21-11-2017 : 21:11:26 - Last disconnection on: : 21-11-2017 : 18:20:21

V 4.0.0.44164(LP,U,linux) (Rev:43856 2017-04-27 09:03:29 +0200#(D201714)) (RPM D201714)

Welcome to EPOQUE Rebuild under the Production Environment

[EPODOC: SS 5] foam and (passage or way or path or duct or diameter or pip+)

Results in EPODOC 32.613

[SS 6] 5 and (slurry) and port

Results in EPODOC 20

[SS 7] ..li



1/20 © EPODOC / EPO

PN - [CN106493000](#) A 20170315

PR - CN20161963331 20161028

AP - CN20161963331 20161028

DT - I

CNOI - [B03D1/1462](#) ; [B03D1/1481](#) ; [B03D1/16](#)

PA - UNIVHENANPOLYTECHNIC

TI - Bottom driving type laboratory flotation machine

AB - The invention discloses a bottom driving type laboratory flotation machine. The bottom driving type laboratory flotation machine is characterized by comprising a floatation tank, a bubble generating system, a material and **slurry** mixing system and a **foam** recovering system, wherein the floatation tank is arranged above the base and the upper end of the floatation tank is of an open structure; the bubble generating system comprises an inflating pump arranged inside the base, an annular air chamber arranged at the bottom of the floatation tank as well as a connecting **pipe** connected between an air outlet of the inflating pump and an air inlet of the annular air chamber; the material and **slurry** mixing system comprises stirring impellers which are positioned at the bottom of the floatation tank and are driven by a stirring shaft and a stirring and driving mechanism which is arranged in the base and is used for driving the driving shaft; and the **foam** recovering system comprises three scrapers and an overflow groove; the three scrapers are arranged at the upper part of the floatation tank, are uniformly arranged in a 60-degree form and are synchronously driven by a scraper motor; and the overflow groove is formed around the outer side of a top outer edge **port** of the floatation tank and is of an annular structure. The bottom driving type laboratory flotation machine disclosed by the invention can be used for mineral separation of a laboratory and also can be used for shooting a flow field and bubbles in the floatation tank of the laboratory.

2/20 © EPODOC / EPO

PN - [CN106362332](#) A 20170201
 PR - CN20161984719 20161109
 AP - CN20161984719 20161109
 DT - I
 CNOI - [A62C5/02](#) ; [A62C31/03](#) ; [A62C31/12](#) ; [A62C99/0036](#) ; [E21F5/02](#)
 PA - UNIVNANJING TECH
 TI - Full-size three-phase-jet **foam** generating device
 AB - The invention relates to a fire extinguisher device, in particular to a full-size three-phase-jet **foam** generating device, wherein the full-size three-phase-jet **foam** generating device can be used not only on site but also in laboratory. The full-size three-phase-jet **foam** generating device comprises a liquid supplying device, a **foam** generating device and a jetting device. The liquid supply device is arranged in front of the **foam** generating device. The liquid supplying device provides foaming liquid through a screw pump. The jetting device is arranged on the back of the **foam** generating device. The liquid supplying device comprises an engine, a foaming **slurry** tank, a stirring paddle and the screw pump. The filter screen is arranged at the bottom of the foaming **slurry** tank. A first valve is arranged on a **slurry** inlet section below the filter screen. The **slurry** inlet section is connected with a suction inlet of the screw pump. An exhaust **port** of the screw pump is connected with the **foam** generating device. The **foam** generating device comprises a mixing section, a **foam** generating section and an outlet section. The front end of the mixing section is connected with the exhaust **port** of the screw pump. The **pipe** wall of the front portion of the mixing section is provided with a foaming agent feeding **pipe**. A second valve is arranged on the upper portion of the foaming agent feeding **pipe**. An air inlet **pipe** is arranged on the **pipe** wall of the front portion of the **foam** generating section. A third valve is arranged on the air inlet **pipe**.

3/20 © EPODOC / EPO

PN - [CN105833786](#) A 20160810
 PR - CN20161152363 20160317
 AP - CN20161152363 20160317
 DT - I
 CT - || STSE (A)
[CN1411876](#) A 20030423 [Y] (CHINESE UNIV OF MINING TECHNOL [CN])
 [Y] 1
 * 说明书具体实施方式, 附图1,2 *;
[CN202864925U](#) U 20130410 [Y] (SICHUAN GOLDEN LEAF BIOLOG PREVENTION & TREAT CO LTD)
 [Y] 1
 * 说明书具体实施方式, 附图1 *;
[CN103521105](#) A 20140122 [A] (CHERY AUTOMOBILE CO LTD)
 [A] 1
 * 说明书具体实施方式, 附图1 *;
[CN104258748](#) A 20150107 [Y] (UNIV TIANJIN TECHNOLOGY)
 [Y] 1
 * 说明书具体实施方式, 附图1,2 *
 CNOI - [B01F7/02](#) ; [B01F15/0203](#) ; [B01F3/04992](#)
 PA - UNIVTIANJIN TECHNOLOGY
 TI - **Foam** generating apparatus used for preparation of mud **foam**

AB - The invention provides a **foam** generating apparatus used for preparation of mud **foam**. The **foam** generating apparatus is composed of an air compressor, air inlet **pipes**, a mud storage tank, a **foam** liquid storage tank and a mixer, wherein the top of the mud storage tank is provided with one air inlet **pipe**, the bottom of the mud storage tank is provided with an outlet, and a water level indicator a is arranged in the mud storage tank; the top of the **foam** liquid storage tank is provided with another air inlet **pipe**, the bottom of the **foam** liquid storage tank is provided with another outlet, and a water level indicator b is arranged in the **foam** liquid storage tank; the air inlet **pipes** located at the tops of the mud storage tank and the **foam** liquid storage tank are connected with an outlet **pipeline** of the air compressor; the mixer is separately connected with a 30-DEG T-shaped **pipe** and a **foam** outlet **pipe**; and the other two ends of the 30-DEG T-shaped **pipe** are separately connected with the outlets located at the bottoms of the mud storage tank and the **foam** liquid storage tank and the outlet **pipeline** of the air compressor. The invention has the following advantages: the **foam** generating apparatus is simple in structure, convenient to operate and easy to implement, can convert mud **slurry** and **foam** solutions into **foam** under the action of single power, is applicable to static dust inhibition for **port** bulk, structural fire protection and controlling of fire hazards with spontaneously-combusting ignition points, and has wide application prospects and substantial economic and social benefits.

4/20 © EPODOC / EPO

PN - [CN105666692](#) A 20160615

PR - CN2016165847 20160129

AP - CN2016165847 20160129

DT - I

CT - || STSE (A)

[CN101318348](#) A 20081210 [A] (UNIV HENAN POLYTECHNIC [CN])

[A] 1-10

* 全文 *;

[CN104108134](#) A 20141022 [Y] (HUAHAI INST TECHNOLOGY)

[Y] 1-10

* 说明书第[0005]段-[0018]段及附图1 *;

[CN104416678](#) A 20150318 [Y] (UNIV SW SCI & TECH SWUST)

[Y] 1-10

* 说明书第[0005]段-[0028]段及附图1 *;

[CN204658683U](#) U 20150923 [A] (SHANGHAI HUANING AUTOMAION TECHNOLOGY CO LTD)

[A] 1-10

* 全文 *;

[US5451104](#) A 19950919 [A] (KLEEN EUGEN [DE], et al)

[A] 1-10

* 全文 *;

[CN85106754](#) A 19870218 [A]

[A] 1-10

* 全文 *

CNOI - [B28C7/04](#) ; [B28C5/08](#) ; [B28C5/12](#)

PA - UNIV HUBEI

TI - Low-**foam**-break-rate **foam** concrete preparation system

AB - The invention discloses a low-**foam**-break-rate **foam** concrete preparation system. The low-**foam**-break-rate **foam** concrete preparation system comprises a

cement **slurry** stirring device, a cement **slurry** conveying device, a **foam** generation device, a cement **foam** mixing device and a gassing device; a cement **slurry** feed **port** and a **foam** feed **port** are formed in one end of the cement **foam** mixing device; a discharge **port** is formed in the other end of the cement **foam** mixing device; an outlet of the cement **slurry** stirring device is communicated with the cement **slurry** feed **port** through the cement **slurry** conveying device; an outlet of the **foam** generation device is communicated with the **foam** feed **port**; and a discharge **port** of the cement **foam** mixing device is communicated with an inlet of the gassing device. The low-**foam**-break-rate **foam** concrete preparation system has the following beneficial effects: an unit body positioned in the gassing device can accelerate the flowing speed of **foam** concrete; because of the Bernoulli principle and the Venturi effect, the pressure is correspondingly reduced; at this time, external air is automatically sucked in from an air inlet to mix with the **foam** concrete in a **pipe** to form fine bubbles; and meanwhile, the gassing device can reduce the **foam** concrete conveying pressure to prevent formation of large bubbles in the **foam** concrete caused by higher pressure in a conveying **pipe**.

5/20 © EPODOC / EPO

- PN - [CN203447955U](#) U 20140226
- PR - CN20132520710U 20130826
- AP - CN20132520710U 20130826
- DT - I
- PA - WENGFU GROUP CO LTD
- TI - Low-concentration sulfur dioxide absorbing tower
- AB - The utility model discloses a low-concentration sulfur dioxide absorbing tower. The low-concentration sulfur dioxide absorbing tower is characterized in that a sulfur dioxide gas inlet (6) is formed in the lower part of a tower body (1); a **foam** remover (2) is arranged at the upper part of the tower body (1); one or multiple layers of annular spray devices are arranged on the upper middle layer inside the tower body (1); a **pipeline** (5) of each layer of annular spray devices is provided with one or multiple spray heads (7); each layer of spray heads (7) are staggered with the spray heads (7) positioned above and below the spray heads (7) to ensure that the integral tower body (1) is covered with spray **slurry**; a phosphorus concentrate pulp discharge **port** (9) is formed in the lower part of the tower body (1); a stirrer motor (4) is arranged at the upper part of the tower body (1), the stirrer motor (4) drives one or multiple layers of stirrer paddles (8) through shafts; the stirrer paddles (8) are arranged at the bottom of the tower body (1). The low-concentration sulfur dioxide absorbing tower disclosed by the utility model can meet the requirement in a new national standard being less than or equal to 400mg/NM<3>.

6/20 © EPODOC / EPO

- PN - [CN103382940](#) A 20131106
- PNFP - CN103382940B B 20160518
- PR - CN20131238550 20130617
- AP - CN20131238550 20130617
- DT - I
- CT - || STSE (A)
[CN201265562Y](#) Y 20090701 [X] (SHANDONG ZHANGQIU BLOWER WORKS [CN])
[X] 1,3-5
说明书第3页第3行至第4页第7行以及附图4-7

[CN101125312](#) A 20080220 [A] (XUNLONG LIU [CN])

[A] 1-5

全文

[CN203374493U](#) U 20140101 [R] (HUBEI TIANMEN PUMP INDUSTRY CO LTD)

[R] 1-5

权利要求1-5

[CN2128167Y](#) Y 19930317 [A] (SHENYANG MINING MACHINERY PLAN [CN])

[A] 1-5

全文

[CN202638596U](#) U 20130102 [A] (SINOCHEM FULING CHONGQING CHEMICAL INDUSTRY CO LTD)

[A] 1-5

全文

[CN202356197U](#) U 20120801 [A] (ALUMINUM CORP OF CHINA LTD)

[A] 1-5

全文

- PA - (A)
HUBEI TIANMEN PUMP INDUSTRY CO LTD
- TI - (A)
Horizontal dense **slurry foam** pump system
- AB - (A)
The horizontal dense **slurry foam** pump system at least comprises an ore **slurry** defoaming pool with a fluid director and a horizontal dense **slurry foam** pump, wherein the ore **slurry** defoaming pool with the fluid director is in transverse fit connection with the horizontal dense **slurry foam** pump through a rubber flexible joint; **foam** ore **slurry** with certain inlet pressure head tangentially enters a work bin formed by the combination of cylinders and a conical tube from a feeding **port** of the ore **slurry** defoaming pool with the fluid director, and generates a strong eddy in the ore **slurry** defoaming pool with the fluid director by virtue of the effect that the pressure head is absorbed by the horizontal dense **slurry foam** pump; gas is compulsively separated out from the **foam** ore **slurry** subjected to centrifugal force, and is discharged through a middle vent **pipe**; the pre-whirl of the ore **slurry** is eliminated by the fluid director, and then the ore **slurry** enters an inlet of the horizontal dense **slurry foam** pump. According to the invention, a special impeller for the horizontal dense **slurry foam** pump is adopted, so that the excellent hydraulic performance is demonstrated; the single-stage flux lift of the horizontal dense **slurry foam** pump system is greatly improved, theoretically, the flux can reach 10000 m³/h, the lift is 120 m, the weight concentration of conveyed ore **slurry** can reach 70%, and the viscosity of the conveyed ore **slurry** can reach 300 mpa.s; **slurry** liquid with high bubble content, high concentration and high viscosity can be conveyed; besides, the anti-cavitation performance is remarkably improved, the overall efficiency of the pump is remarkably improved, and the pump can still operate effectively when the supplied materials are insufficient.

7/20 © EPODOC / EPO

PN - [CN103362515](#) A 20131023

PNFP - CN103362515B B 20160113

PR - CN20131318111 20130726

AP - CN20131318111 20130726

DT - I

CT - || STSE (A)

	CN201424940Y Y 20100317 [A] (CHINA TUNNEL CONSTRUCTION CO LTD GUANGDONG) [A] CN102071942 A 20110525 [XY] (SHENYANG HEAVY MACHINERY GROUP CO LTD) [X] [Y] CN202500570U U 20121024 [Y] (CCCC TUNNEL ENGINEERING CO LTD) [Y] JP2005324283 A 20051124 [A] (NAKAGURO KENSETSU KK, et al) [A] JP2008050810 A 20080306 [A] (KUMAGAI GUMI CO LTD) [A] CN2931362Y Y 20070808 [Y] (LIN TIANDA [CN]) [Y] 6 CN102606164 A 20120725 [A] (DALIAN CREST FLUID EQUIPMENT CO LTD) [A] CN203362172U U 20131225 [R] (CHINA RAILWAY TUNNELING EQUIP) [R]
PA	- (A)
	CHINA RAILWAY TUNNELING EQUIP
TI	- (A)
	High-pressure water washing system for soil chamber of shield tunneling machine
AB	- (A)
	The invention discloses a high-pressure water washing system for a soil chamber of a shield tunneling machine. The system comprises a multistage centrifugal pump which is arranged in a backup device of the shield tunneling machine and is connected with a water system cleaning pipeline. The multistage centrifugal pump is connected with a main drive or a front shield baffle of the shield tunneling machine through a high-pressure water pipe. Washing ports are formed in the wall and the central part of the soil chamber. High-pressure water washing devices are arranged in the washing ports. By adding the high-pressure water washing system, in the cutter head driving process, the high-pressure water washing devices are started up or the flow of high-pressure water for washing the soil chamber is controlled according to stratum changes, the flowability of soil in the soil chamber is effectively improved in time and mud cakes are prevented from being produced in the soil chamber. The high-pressure water washing system is applied to soil pressure balance shield tunneling machines and slurry shield tunneling machines. The high-pressure water washing devices are fixed through a back-mounted bolt fixing way, are simple to manufacture and are convenient to repair. In addition to high-pressure water, the high-pressure water washing devices can also spray foam, bentonite and the like. One washing port can be used for multiple purposes. After the high-pressure water washing devices are disassembled, boulders in the soil chamber can be handled or anchor rods can be driven at the front of a cutter head through the washing ports and workers do not need to enter the soil chamber.
8/20	© EPODOC / EPO
PN	- CN203174431U U 20130904
PR	- CN20132211991U 20130424
AP	- CN20132211991U 20130424
DT	- I
PA	- HUBEI BAOTA PAPER CO LTD
TI	- White water recovery tower

AB - The utility model discloses a white water recovery tower. The white water recovery tower comprises a barrel, wherein an inclined drainage channel is arranged at the top of the barrel, a drainage **port** is arranged at the very bottom of the drainage channel, a steady flow box is placed at the top end of the barrel, a partition plate is arranged inside the steady flow box to divide the steady flow box into a water collecting box and a box body of which the bottom end is connected with one end of a water inlet **pipe**, the other end of the water inlet **pipe** is connected with a flow guiding cover, the flow guiding cover is in a tapered structure, the upper portion of the barrel is a cylindrical barrel, the lower portion of the barrel is a tapered barrel, a support is arranged at the connection position of the tapered barrel and the cylindrical barrel, and a **slurry** outlet is arranged at the bottom end of the tapered barrel. Thus, white water enters the water collecting box in the steady flow box firstly and then flows into the upper portion of the flow guiding cover after the partition plate is submerged by the white water, the impact force of the water flow can be effectively reduced when the white water enters the white water steady flow box, the impact **foam** is reduced, and the sedimentation of solids is effectively improved.

9/20 © EPODOC / EPO

PN - [CN203031806U](#) U 20130703

PR - CN2013265591U 20130205

AP - CN2013265591U 20130205

DT - I

CCA - [Y02W30/62](#)

PA - LIUYANQING

TI - **Foam** filling device for recycling plastics to produce hollow bricks

AB - The utility model relates to a **foam** filling device for recycling plastics to produce hollow bricks, and belongs to a pretreatment device before the formation of a material. The **foam** filling device consists of a polyphenyl pulverizing machine, a storage cabin and a blender, wherein a discharging **port** of the polyphenyl pulverizing machine is connected with an inlet on the upper part of the storage cabin through an air conveying **passage**, a discharging **port** of the storage cabin is in butt joint with an inlet of the blender, one side bottom of the blender is provided with a discharging **port**, and the lower part of the discharging **port** is provided with a finished product conveyor belt. The **foam** filling device for recycling the plastics to produce the hollow bricks is reasonable in structure design, by adopting an automatic production line integrating the sterilization, screening, pulverizing, storage, stirring and conveying, a great number of manual complex procedures can be saved, the polyphenyl **slurry** is used as the filling, no pollution, no toxicity and no dust exist, an environment-friendly and energy-saving effect can be completely realized, not only can an insulation effect of the product be guaranteed, but also the waste can be recycled, the production cost is also reduced, and the comprehensive benefit is high.

10/20 © EPODOC / EPO

PN - [CN202767941U](#) U 20130306

PR - CN20122456366U 20120907

AP - CN20122456366U 20120907

DT - I

PA - ZHANGZHIHONG;ZHANGFUYAN

- TI - Cementing truck for random injection allocation of liquid-solid-gas three-phase water **slurry**
- AB - The utility model relates to oil and gas well cementing equipment, in particular to a cementing truck for random injection allocation of liquid-solid-gas three-phase water **slurry**. Two inlets of a pulp mixing system of the cementing truck are respectively connected with a water supply pump **pipeline** of an agent supply system and an ash supply **pipeline** of solid oil well cement. The front end of an outlet of the pulp mixing system is connected with an outlet **pipeline** of a blowing-agent **foam**-stabilizer supply pump through a three-way component. An outlet of the pulp mixing system is connected with a liquid inlet of a cementing pump. A power transmission system is respectively connected with the cementing pump and a power input end of a gas high-pressure compressor through a transmission box, a gas inlet of the gas high-pressure compressor is connected with an outlet **pipeline** and an exhaust **port** of the gas high-pressure compressor is connected with a gas inlet of a gas supply quantity regulator through a high-pressure gas **pipeline**. The cementing truck for random injection allocation of liquid-solid-gas three-phase water **slurry** has the advantage of achieving configuration of liquid-solid-gas three-phase flow inflatable **foam** low-density cement **slurry**, and the cement **slurry** can effectively prevent the cementing pump from leaking and cementing 'channeling', accordingly quality of the well cementation is improved, cost of well cementation is reduced and efficiency of well cementation is improved.

11/20 © EPODOC / EPO

- PN - [CN202300412U](#) U 20120704
- PR - CN20112423469U 20111031
- AP - CN20112423469U 20111031
- DT - I
- PA - JIANGSU KAIGONG TUNNEL MACHINERY CO LTD
- TI - **Foam** emitting device
- AB - The utility model discloses a **foam** emitting device, which comprises an in-injecting **pipeline**, an injecting **pipeline**, a first rubber cover, a second rubber cover and a back cover, wherein the injecting **pipeline** is exactly arranged in a pre-buried **pipeline** of a shield machine, and the two end ports of the injecting **pipeline** are respectively connected to a front panel of a cutter head and a back panel of the cutter head; the centers of the first and the second rubber covers are respectively and fixedly arranged in one end **port** of the injecting **pipeline**, which is close to the front panel of the cutter head, so as to form a **foam** spraying nozzle; the peripheral surfaces of the first and the second rubber covers are exactly contacted with the inner side surface of the injecting **pipeline**; the back cover is fixedly arranged on one end surface of the injecting **pipeline**, which is close to the back panel of the cutter head; an opening is formed in one side surface of the injecting **pipeline**; and a **foam** in-injecting opening is formed at one end of the in-injecting **pipeline**, and the other end of the in-injecting **pipeline** is communicated with the opening. By adopting the device, **slurry** can be effectively prevented from flowing back to block the **pipelines**, the steady conduction of the **foam** spraying operation is guaranteed, the rubber covers can be effectively prevented from being abraded, the service lives of the rubber covers are prolonged, and the cost of the shield machine is reduced.

12/20 © EPODOC / EPO

- PN - [CN102364050](#) A 20120229
- PNFP - CN102364050B B 20141224

PR - CN20111337462 20111031

AP - CN20111337462 20111031

DT - I

CT - || STSE (A)
[JP3134731B](#) B2 20010213 [A]
 [A]
[CN101298838](#) A 20081105 [A] (SHENYANG HEAVY MACHINERY GROUP [CN])
 [A]
[CN201339473Y](#) Y 20091104 [A] (CHINA RAILWAY TUNNELS GROUP CO [CN])
 [A]
[JP2006083542](#) A 20060330 [A] (KUMAGAI GUMI CO LTD)
 [A]
[CN202300412U](#) U 20120704 [R] (JIANGSU KAIGONG TUNNEL MACHINERY CO LTD)
 [R]
[NL1007808C](#) C1 19990617 [A] (IHC HOLLAND NV [NL])
 [A]
[FR2676500](#) A1 19921120 [A] (BESSAC CREUSEMENT SOUTENEMENT [FR])
 [A]
[CN201003403Y](#) Y 20080109 [A] (UNIV CHINA MINING [CN])
 [A]
[CN201568058U](#) U 20100901 [X] (URBAN RAIL ENGINEERING CO LTD OF CHINA RAILWAY CONSTRUCTION 11 BUREAU GROUP, et al)
 [X]

PA - (A)
 JIANGSU KAIGONG TUNNEL MACHINERY CO LTD

- (B)
 JIANGSU KAIGONG TUNNEL MACHINERY CO LTD; XCMG KAIGONG HEAVY INDUSTRY NANJING CO LTD

TI - (A B)
Foam launching device

AB - (A)
 The invention discloses a **foam** launching device, which comprises an infusing **pipeline**, an injection **pipeline**, a first rubber cover, a second rubber cover and a rear cover, wherein the injection **pipeline** is just arranged in an embedded **pipeline** of a shield machine, and two ports of the injection **pipeline** are respectively connected to a cutter head front panel and a cutter head rear panel; the centers of the first rubber cover and the second rubber cover are respectively fixedly arranged at intervals in one **port** of the injection **pipeline** close to the cutter head front panel to form a **foam** jet hole, and the peripheral surfaces of the first rubber cover and the second rubber cover are just in contact with the inside surface of the injection **pipeline**; the rear cover is fixedly arranged on one end face of the injection **pipeline** close to the cutter head rear panel; the lateral surface of the injection **pipeline** is provided with an opening, a **foam** infusing **port** is formed at one end of the infusing **pipeline**, and the other end of the infusing **pipeline** is communicated with the opening. Through the device, **slurry** can be effectively prevented from refluxing to block the **pipelines**, stable **foam** jet operation is ensured, the rubber covers can be effectively prevented from being abraded, the service life of the device is prolonged, and the cost of the shield machine is reduced.

PR - CN20102654246U 20101213
AP - CN20102654246U 20101213
DT - I
PA - QINGDAO HAIZHONG ENVIRONMENTAL PROT BOILER CO LTD
TI - Special desulfuration and dust removing device for coal-water **slurry** boiler
AB - The utility model provides a special desulfurization dust remover for a coal-water **slurry** boiler, which comprises a desulfurization dust removing device, a dewatering device and a connecting **pipe**. The desulfurization dust removing device comprises a cylinder body, a first spray **pipe** and a first **foam** pore plate; a smoke inlet and an ash discharging opening are formed at the bottom of the cylinder body; the ash discharging opening is positioned below the smoke inlet; the first spray **pipe** is arranged inside the cylinder body in an inserted manner in the radial direction and positioned above the smoke inlet; a plurality of water spray ports are formed on the first spray **pipe**; the first **foam** pore plate is fixedly arranged inside the cylinder body and positioned above the first spray **pipe**; the dewatering device comprises a dewatering tube, a chimney and a whirlwind impeller; the dewatering tube is fixedly arranged at the upper part of the chimney; a drain hole is formed at the lower part of the dewatering tube; the whirlwind impeller is fixedly arranged at the upper part of the dewatering tube; a smoke exhaust **port** is formed on the chimney; one **port** of the connecting **pipe** is connected with the upper end opening of the cylinder body, and the other **port** of the connecting **pipe** is connected with the upper end opening of the dewatering tube. The special desulfurization dust remover for the coal-water **slurry** boiler is used to carry out desulfuration and dust removing treatment on smoke gas so as to reduce pollutions to the environment.

14/20 © EPODOC / EPO

PN - [JP2010195049](#) A 20100909

PNFP - JP5193405B B2 20130508

PR - JP20030148201
20030526; JP20030209461
20030829; JP20100093106
20100414

AP - JP20100093106 20100414

DT - I

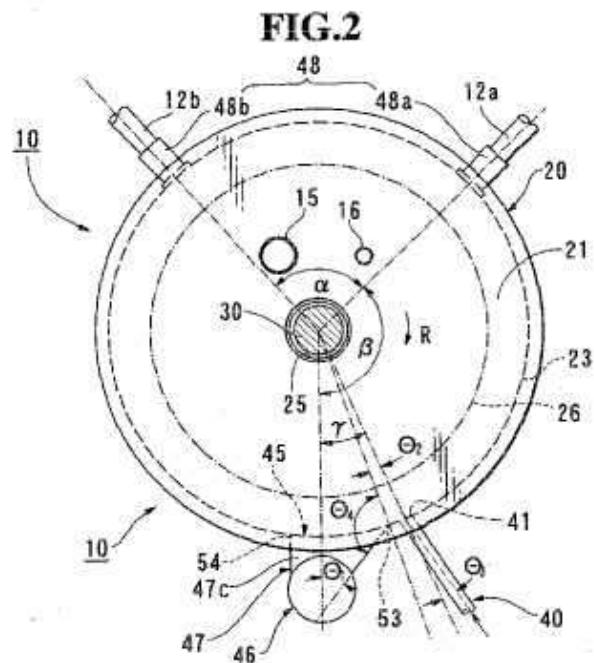
CCI - [B01F7/00766](#) ; [B28C5/0881](#) ;
[B28C5/1269](#) ; [B28C5/386](#)

CCA - [B01F3/04531](#) ; [B28B19/0092](#)

FI - B01F3/04&A; B01F5/00&G;
B01F5/06; B01F7/26&Z;
B28C5/16; B28C5/38;
B28C7/16

FT - 4G035/AB07; 4G035/AC26;
4G035/AC44; 4G056/AA10;
4G056/AA21; 4G056/CC12;
4G056/CC31; 4G078/AA03;
4G078/AB01; 4G078/DA23;
4G078/EA10

PA - (A)
YOSHINO GYPSUM CO



- TI - (A)
MIXING AGITATOR, MIXING-
AGITATING METHOD, AND
METHOD FOR
MANUFACTURING GYPSUM
BOARD
- AB - (A)
PROBLEM TO BE SOLVED: To
provide a mixing agitator and
a mixing-agitating method
that can stably supply **slurry**
at a high flow rate with
uniformly mixed **foam** and
reduce the amount of **foam** to
be supplied to the **slurry**.
- SOLUTION: The mixing
agitator (10) includes a case
(20), a rotary disk (32),
a **slurry** discharge **port** (45),
a **slurry** feed **pipe** (46) and a
hollow connecting section
(47). A **foam** supply **port** (41)
is disposed in a
predetermined position of an
annular wall to supply **foam**
to the **slurry** immediately
before flowing into the **slurry**
discharge **port**. The **slurry**
discharge **port** is provided
with a blade (51) for forming
a slit. The **slurry** and **foam** are
mixed in the **slurry**
discharge **port**. The **foam** is
not substantially subjected to
agitation impact of the mixing
agitator, and the amount of
loss of the **foam** is reduced.
Since the **foam** is uniformly
mixed with the **slurry** even
when the flow rate of **slurry** is
increased, the manufacturing
speed of gypsum boards can
be made high.
- COPYRIGHT: (C)2010,
JPO&INPIT

15/20 © EPODOC / EPO

- PN - [CN201568058U](#) U 20100901
- PR - CN20092289559U 20091225
- AP - CN20092289559U 20091225
- DT - I

- PA - URBAN RAIL ENGINEERING CO LTD OF CHINA RAILWAY CONSTRUCTION 11 BUREAU GROUP; CHINA RAILWAY 11TH BUREAU GROUP CO LTD
- TI - Improved **foam pipeline** system of shield machine
- AB - The utility model relates to an improved **foam pipeline** system of a shield machine, which comprises a **foam** injection **pipeline** system and a control system for controlling the **pipeline**, wherein the **foam** injection **pipeline** is provided with a plurality of main **pipelines**, each main **pipeline** is provided with a **foam** generator, the **foam** injection end of the plurality of main **pipelines** is respectively communicated with a **foam** stock solution box and a water source through a **foam** pump and a water pump, the **foam** output-input end of one main **pipeline** is provided with two branch **pipes**, the two branch **pipes** are respectively communicated with a soil cabin and a single-level helical conveyor, the **foam** input-output end of other main **pipelines** is communicated with an injection **port** of a cutter head front panel, the central part of a cutter head is provided with a water-gas **pipeline**, and the top part of the soil cabin is simultaneously provided with a **slurry** injection **pipe**. The improved **foam pipeline** system can ensure the supply pressure of each injection **port**, and reduces the stoppage possibility caused by the inadequate pressure of the front injection **port** of the cutter head. A control panel independently controls each **pipeline**, the operation personnel can instantly examine and remove the stoppage of the **pipeline**, and the shield cover of the injection **port** also can ensure that the injection **port** is free from being blocked by the mud.

16/20 © EPODOC / EPO

- PN - [JPS60138025](#) A 19850722
- PR - JP19830244223 19831226
- AP - JP19830244223 19831226
- DT - I
- CT - || STSE (A)
[JPS58113331](#) A 19830706 [] (NIPPON MINING CO)
- CCA - [Y02P10/236](#)
- FI - C22B15/00&105; C22B15/08; C22B30/04; C22B7/00; C22B7/00&H
- FT - 4K001/AA03; 4K001/AA09; 4K001/BA17; 4K001/DB03; 4K001/JA01
- PA - NIPPON MINING CO
- TI - OXIDATION LEACHING DEVICE FOR ELECTROLYTIC CEMENT COPPER
- AB - PURPOSE:To develop an As leaching tank for electrolytic cement copper having an excellent extraction rate of As by disposing a vane for stirring the content of a reaction vessel which dissolves and extracts the As contained in the **slurry** of the electrolytic cement copper by extraction using sulfuric acid from said **slurry** and a blow **pipe** for air **foam** for oxidation to said vessel near the bottom thereof and increasing the depth in the vessel. CONSTITUTION:A reaction vessel 1 for separating and extracting As from electrolytic cement copper containing Cu, As, Sb, Bi, etc. is made of a longitudinally long vessel and a revolving shaft 5 is attached to the central part thereof from the upper part. A vane 3 for stirring is attached to the top end of the shaft near the bottom of the vessel. The air ejection **port** of an air blow **pipe** 1 is disposed near the vane for stirring. The **slurry** of the electrolytic cement copper and sulfuric acid are charged into the vessel 1 to the specified depth or above and are stirred by the vane 3; at the same time, air **foam** is blown thereto to dissolve and extract the As in the electrolytica cement copper. An antifothing ring 40 using water or air is provided in the upper part of the vessel 1 to prevent the **foam** from overflowing to the outside of the vessel.

17/20 © EPODOC / EPO

PN - [JPH06315696](#) A 19941115
PR - JP19930124828 19930430
AP - JP19930124828 19930430
DT - I
CCA - [Y02W10/15](#)
FI - B01D19/02; C02F3/12&U+ZAB
FT - 4D011/BA01; 4D028/AA01; 4D028/AA04; 4D028/BC11
PA - FUJITA CORP
TI - DEFOAMING DEVICE FOR ACTIVATED SLUDGE TANK
AB - PURPOSE:To effectively eliminate the scum generated in an activated sludge tank by sucking the scum on the surface of an activated sludge **slurry** with an air current produced by a blower into a **foam** breaking chamber and impacting the scum with the wind velocity at that time. CONSTITUTION:A **foam** breaking chamber 1 such as an eliminator for eliminating scum by collision and impact is set on an activated sludge tank 2. A scum sucking member 15 held on the surface L of an activated sludge **slurry** in the tank 2 by a float 17 is connected to the inlet of a blower 11 through a flexible hose 14, and the outlet of the blower 11 is connected to the scum inlet 7 of the **foam** breaking chamber 1. Meanwhile, an exhaust **pipeline** 20 with the tip set in the space in the tank 2 is connected to the exhaust **port** 8 of the **foam** breaking chamber 1. Accordingly, the scum on the activated sludge **slurry** is naturally collected and treated without using any liq. chemical.

18/20 © EPODOC / EPO

PN - [JPH03227475](#) A 19911008
PNFP - JPH0665794B B2 19940824
PR - JP19900019245 19900131
AP - JP19900019245 19900131
DT - I
CCA - [Y02W30/648](#)
FI - B01D33/38; D21C5/02; D21C9/02; D21C9/18; D21F1/66
FT - 4D026/BA03; 4D026/BB01; 4D026/BC24; 4D026/BC26; 4D026/BC29; 4D026/BC30; 4D026/BF06; 4D026/BF19; 4L055/AA11; 4L055/BB02; 4L055/BB30; 4L055/CB02; 4L055/CB60; 4L055/FA22; 4L055/FA30
PA - (A)
IWASHINA SEISAKUSHO KK
TI - (A)
FOAM CLEANING APPARATUS FOR NOZZLE PART OF PAPER **SLURRY** EJECTORSEPARATOR
AB - (A)
PURPOSE:To prevent the deposition of paper-making raw material of a paper-making **slurry** in a nozzle part by introducing compressed air into a nozzle part through a compressed air **pipe** and ejecting the compressed air by opening a valve at the tip end of the compressed air **pipe**. CONSTITUTION:When the paper-making raw material of a paper-making **slurry** flowing in a nozzle part 9 begins to deposit in an ejection **port** 9a and a feed **pipe** 9b, a valve 4 is opened by a controller 5 to eject the compressed air in an air compressor A from the tip end of a **slurry** feeding **pipe** 12 through a compressed air **pipe** C.

19/20 © EPODOC / EPO

PN - [GB964280](#) A 19640722

PR - US19600069214
19601114; US19610116881
19610613

AP - GB19610040295 19611110

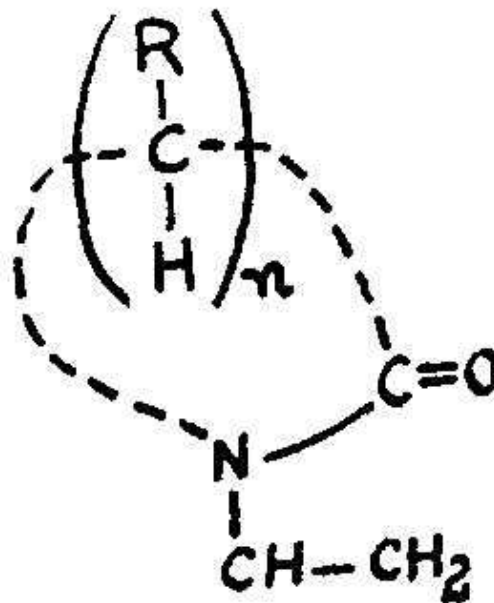
DT - **

CCI - [C12C5/004](#) ; [A23L2/82](#) ;
[C12C11/11](#) ; [C12H1/00](#) ;
[C12H1/0424](#)

PA - WILLIAM DOUGLAS
MCFARLANE; JULIAN LOUIS
AZORLOSA; EVELYN JEAN
MARTINELLI; PETER DAVIS
BAYNE

TI - Improvements in or relating
to processes for clarifying
and stabilizing vegetable
beverages containing tannin

AB - N-polyvinyl polylactams are
obtained by treating either N-
vinyl- α -pyrrolidone
according to the method
disclosed in U.S.A.
Specification 2,938,017 or
analogous N-vinyl lactams
represented by the general
formula: <FORM:
0964280/C3/1> wherein n
represents 3, 4 or 5 and R
represents hydrogen, methyl
or ethyl, particularly N-vinyl-
5-methyl pyrrolidone, N-vinyl
caprolactam and N-
vinyl **piperidone**, in a manner
analogous to that in which
the N-vinyl pyrrolidone is
treated; this involves heating
the N-vinyl lactam to a
temperature of from 40 DEG C.
to 200 DEG C. in the presence
of a small amount of an
alkali polymerization
catalyst, such as sodium or
potassium hydroxide and
sodium methylate. According
to an example, 200 g. N-vinyl
pyrrolidone and 2 g. sodium
hydroxide flakes were heated
in a distilling flask at 100



mm. under total reflux for about 3 hours. At this time the temperature rose from 145 DEG C. to 190 DEG C. and the refluxing monomer was converted to a white solid. After cooling, the polymer was slurried with water to wash out caustic and unconverted monomer, filtered, and dried at 50-60 DEG C. in vacuo. The polyvinyl polypyrrolidone produced had a melting point of at least about 300 DEG C. and was insoluble in common solvents (specified). The N-polyvinyl polylactams may be employed in the form of an active coating on an inert carrier such as silica gel, alumina, talc or diatomaceous earth, or as an aqueous **slurry** or suspension, for removing tannin from tannin-containing aqueous liquids such as beer. Specification 854,455 and U.S. A. Specification 2,317,804 also are referred to. ALSO: Tannin is removed from tannin-containing liquids such as wort, beers, ales, brandies, whiskies, wines, fruit juices and pharmaceutical liquors, by absorbing the tannins with an effective quantity of certain N-polyvinyl polylactams characterized by their high melting points and insolubility in common solvents. The N-polyvinyl polylactams are obtained by treating either N-vinyl- α -pyrrolidone according to the method disclosed in U.S.A. Specification 2,938,017 or analogous N-vinyl lactams represented by the general formula: <FORM:0964280/C6-C7/1> wherein n represents 3, 4 or 5 and R represents

hydrogen, methyl or ethyl, particularly N-vinyl-5-methyl pyrrolidone, N-vinyl caprolactam and N-vinyl **piperidone**, in a manner analogous to that in which the N-vinyl- α -pyrrolidone is treated; this involves heating the N-vinyl lactam to a temperature of from 40-200 DEG C. in the presence of a small amount of an alkali polymerization catalyst. The N-polyvinyl polylactam may be employed in powder, paste or sheet form, as an active coating on an inert carrier such as silica gel, alumina, talc or diatomaceous earth, or as an aqueous **slurry** or emulsion. The following may be utilized in co-related proportions to the amount of the N-polyvinyl polylactam: papain proteolytic enzyme chill proof material, polyvinyl pyrrolidone, alginic acid (**foam** stabilizer), and potassium metabisulphite, sodium dithionite and other materials for imparting sulphur dioxide. Examples are directed to the removal of anthocyanogens from ale in storage, from brewer's wort in the kettle and from **port** wine employing either the polyvinyl polypyrrolidone or polyvinyl polycaprolactam produced as specified above; in control experiments the comparative effect of hexamethylenediamine adipate (Nylon 66) is studied. Specification 854,455 also is referred to.

20/20 © EPODOC / EPO
 PN - [CN1429662](#) A 20030716
 PNFP - CN1169626C C 20041006
 PR - CN2001145542 20011229
 AP - CN2001145542 20011229

DT - I

PA - (A C)
UNIVZHONGNAN [CN]

TI - (A C)
Flotation column used in bauxite reverse flotation desilicon

AB - (A)
A floatation column for backfloatation of bauxite to remove Si is composed of a column body, an ore feeder, a **foam** tank on the top of the column body, a contactor at lower end of the column body and communicated with the ore **slurry** circulating **pipe** in the column body, an ore discharging **port**, a washing water feeder installed in the upper enriching area of the column, flow stabilizing plates and dispersers. Its advantages are reduced loss, high Si/Al ratio of ore concentrate and high recovery rate of Al₂O₃.

[SS 7] 5 and (port or opening or entry or entrance)

Results in EPODOC **4.667**

[SS 8] 7 and first and second

Results in EPODOC **502**

[SS 9] 8 and orifice

Results in EPODOC **8**

[SS 10] ..li



1/8 © EPODOC / EPO

PN - [CN203577203U](#) U 20140507

PR - CN20132698934U 20131106

AP - CN20132698934U 20131106

DT - I

PA - TIANGUANG FIRE FIGHTING INC CO

TI - **Foam**/water dual-purpose monitor head

AB - The utility model discloses a **foam**/water dual-purpose monitor head which mainly comprises a monitor head body and a foaming **pipe** which are in mutually through connection, wherein a liquid inlet is formed in the free end of the monitor head, and an injection **orifice** is formed in the free end of the foaming **pipe**; the monitor head body is provided with a primary admission **port**, a **second** admission **port** is formed in one end, which is connected with the monitor head, of the foaming **pipe**, and a rectifying piece is installed in the foaming **pipe**. The foaming liquid entering into the monitor head body through the liquid inlet is effected by the primary admission **port** **first** and then premixed with air; then, the foaming liquid is effected by the secondary admission **port** and then sufficiently mixed with air to ensure that the **foam** liquid is in a turbulent condition; the **foam** liquid in the turbulent condition flows into the foaming **pipe** and flows through the rectifying piece. The rectifying piece can cut the runner section of the **foam** liquid, and the flow pattern of the **foam** liquid is changed from turbulence to a turbulent flow. The **foam** liquid has an excellent foaming effect, the liquid separating time can reach 3 minutes, and the range of a water monitor

which is jetted from the injection **orifice** is further improved to a certain extent.

2/8 © EPODOC / EPO

- PN - [RU2479333](#) C1 20130420
- PR - RU20120113906 20120410
- AP - RU20120113906 20120410
- DT - I
- PA - KOCHETOV OLEG SAVEL EVICH [RU]; STAREEVA MARIJA OLEGOVNA [RU]; STAREEVA MARIJA MIKHAJLOVNA [RU]
- TI - VORTEX **FOAM** GENERATOR OF KOCHETOV
- AB - FIELD: fire-prevention facilities. SUBSTANCE: invention relates to means of cutting fluids, solutions. In the vortex **foam** generator, comprising a housing with the vortex chamber and a nozzle, the housing is made in the form of a fitting with a **pipe** for fluid supply and an air supply **duct**, and a cylindrical coaxial tube rigidly connected thereto, and coaxially to the housing, in its lower part, a nozzle 5 is connected which is made in the form of a **first**-stage centrifugal swirler in the form of a cylindrical cavity with at least three tangential inlets in the form of cylindrical openings, and over the **first**-stage centrifugal swirler a vortex conical chamber is mounted with a screw thread on its inner surface, which is the **second** stage of the fluid swirler, and the centrifugal swirler through the cavity, which is connected to the central **orifice**, is connected to the vortex conical chamber in its lower part, and in the upper part the conical chamber has at least three tangential inlets in the form of cylindrical openings tangentially located to its inner surface, and the supply of the working body to the tangential inlets is carried out by at least three cylindrical openings connected with tangential inlets at right angles, and which axes are parallel to the axis of the nozzle, and these openings are connected to the cylindrical chamber located above the cover of the conical chamber, perpendicular to its axis, and over the cylindrical chamber there is a cowling made in the form of a truncated cone with a central **opening**, connected simultaneously to the cylindrical chamber and the housing **opening** for supplying fluid from the main **pipe**, and between the lateral conical surface of the cowling and the inner conical surface of the housing in the place of its connection with the tube there is a gap in the form of a conical ring, and the centrifugal swirler is mounted in the housing to form a circular cylindrical chamber for supplying fluid to the tangential inlets of the centrifugal swirler, which cylindrical cavity is connected to the outlet conical chamber of the nozzle, and on the nozzle housing, coaxially to the conical chamber, a divider is fixed, made in the form of a cylindrical perforated shell with a perforated bottom mounted opposite the conical chamber, and on the nozzle housing, coaxial to the conical chamber, a divider is fixed, made in the form of a diffuser with a pack of perforated plates mounted in front of the conical chamber. EFFECT: increased efficiency of fire fighting by increasing the spray cone and finely divided atomised fluid, as well as formation of high-expansion air filled **foam**. 1 dwg

3/8 © EPODOC / EPO

- PN - [JPH04126259](#) A 19920427
- PR - JP19900246154 19900918
- AP - JP19900246154 19900918
- DT - I
- CT - [JPH02194966](#) A []; [JPS62113554](#) A [];
[JPH0419150](#) A []

- FI - B41J2/01&301; B41J2/01&401; B41J2/165&101; B41J2/165&203; B41J2/165&205; B41J2/165&207; B41J2/165&211; B41J2/165&301; B41J2/165&303; B41J2/165&305; B41J2/165&505; B41J2/17&201; B41J2/17&203; B41J2/175; B41J2/175&113; B41J2/175&131; B41J2/175&141; B41J2/175&169; B41J2/175&171; B41J3/04&102H; B41J3/04&102N; B41J3/04&102R; B41J3/04&102Z
- FT - 2C056/CA01; 2C056/CB01; 2C056/CC06; 2C056/CC09; 2C056/CC15; 2C056/DD10; 2C056/DD15; 2C056/DH14; 2C056/DH15; 2C056/DH16; 2C056/EA16; 2C056/EA22; 2C056/EC24; 2C056/EC54; 2C056/EC57; 2C056/FA03; 2C056/FA10; 2C056/HA52; 2C056/JA05; 2C056/JA10; 2C056/JA13; 2C056/JB04; 2C056/JB09; 2C056/JC10; 2C056/JC13; 2C056/JC20; 2C056/KC11; 2C056/KC16; 2C056/KC21
- PA - CANON KK
- TI - INK JET RECORDER
- AB - PURPOSE: To keep an ink delivery **port** forming surface in a good ink delivery state by a method wherein a **second** cleaning member for removing foreign particles adhering on a **first** cleaning member is provided on a through **path** of the **first** cleaning member for cleaning the ink delivery **port** forming surface. CONSTITUTION: After the completion of a preliminary delivery, a blade 59 is projected toward a recording head by the rotation of a cam 553 to succeedingly conduct a wiping action. In this state, a carriage 11 is scanned in a recording direction as shown by an arrow. In this manner, the blade 59 is abutted on and around an **orifice** blade part 940a of a top plate 940, which is an ink delivery **port** forming surface of the recording head, to remove ink and dust adhering on the **orifice** blade part 940a and the surface thereabouts. The adhering ink and dust are led to an absorbing and attracting member 981 provided on the downstream side in the recording direction. The absorbing and attracting member 981 is preferably made of a **foam** polymer resin having a high ink absorption and a suitability for attracting and holding dust, such as a polymer absorbing body of **foam** polyurethane.

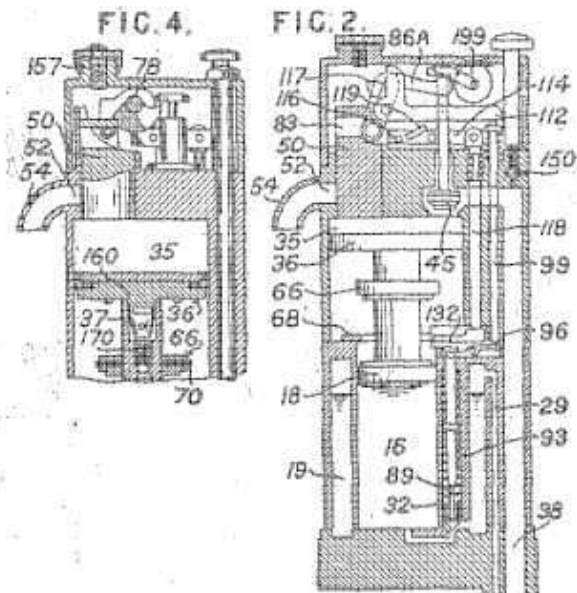
4/8 © EPODOC / EPO

- PN - [JPH0542976](#) A 19930223
- PR - GB19900003440 19900215
- AP - JP19910040979 19910212
- DT - I
- CCI - [B65D85/73](#)
- FI - A23L2/00&W; A23L2/54&101; B65D25/02&A; B65D81/20&Z; B67C7/00
- FT - 3E062/AA09; 3E062/AB02; 3E062/AC02; 3E062/AC03; 3E062/AC06; 3E062/AC07; 3E062/BA20; 3E062/BB06; 3E062/BB09; 3E062/BB10; 3E067/AA03; 3E067/AB26; 3E067/AC01; 3E067/BA03A; 3E067/BB11A; 3E067/BB14A; 3E067/BC03A; 3E067/BC07A; 3E067/EA18; 3E067/EA32; 3E067/EB17; 3E067/EB22; 3E067/EB27; 3E067/EE21; 3E067/EE28; 3E067/FA01; 3E067/FC01; 3E067/GA19; 3E079/AA02; 3E079/AB01; 3E079/GG02; 3E079/GG10; 4B017/LE10; 4B017/LP10; 4B017/LP15; 4B017/LP18; 4B117/LE10; 4B117/LP11; 4B117/LP17; 4B117/LP20
- PA - GINESU BULL WING WAARUDOWAIDO
- TI - DRINK PACKAGING CONTAINER AND METHOD FOR PACKAGING SAME
- AB - PURPOSE: To provide a beverage container and that containing dissolved gas in which a hollow pod is quickly, easily, and effectively contained in a package container, and to also provide a method of producing the container. CONSTITUTION: Beverage from a **first** chamber 9 enters a **second** chamber 17 by **way** of an **orifice** 18, and when the beverage is in equilibrium a secondary headspace 21 is formed in an insert 10. Upon **opening** a bottle 1, the pressure differential between the secondary

headspaces 20 and 21 ejects beverage from the insert 10 through the **orifice** 18 to develop **foam** on the beverage. The insert 10 may carry a permanent magnet 15 which is encapsulated within the plastics, the magnet 15 being attracted to a metallic strip 8 on the bottle base. The insert 10 is dimensioned to drop into position on the bottle base through the bottle mouth, and in an alternative arrangement, the permanent magnet is carried on the bottle base to attract a metallic strip carried by the insert 10.

5/8 © EPODOC / EPO

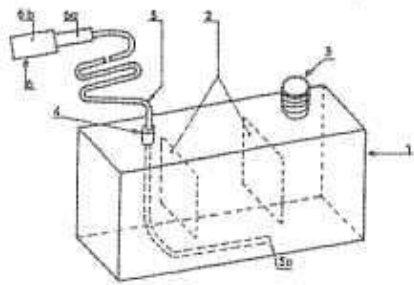
- PN - [GB682495](#) A 19521112
- PR - CAX682495 19500125
- AP - GB19510001977 19510125
- DT - *
- CCI - [B67D1/0007](#)
- PA - RALPHSETHWHALEY
- TI - Liquid measuring and dispensing machine
- AB - 682,495. Delivering measured quantities of liquid. WHALEY, R. S. Jan. 25, 1951 [Jan. 25, 1950], No. 1977/51. Class 106 (v) A liquid measuring apparatus particularly for delivering a predetermined quantity of beer with a predetermined collar of **foam**, comprises a measuring chamber 35 having a piston 36 which, during the filling of the chamber, displaces fluid from a cylinder 16 against gas pressure supplied, through a **duct** 29; on the delivery stroke, the piston is returned at a rate which will give the required quantity of **foam** by the gas pressure returning the fluid through an adjustable valve 32 and, at the end of the stroke, a small quantity of liquid is left above the piston and, before refilling of the chamber, is subjected to a pressure nearly equal to that of the liquid which will enter through the chamber-filling valve 45, so as to reduce foaming in the measuring chamber. When the apparatus is connected to a



fresh barrel, the supply **duct** 38 is **first** vented through, a needle valve 150 and then a control handle on a shaft 78 is moved to the " fill position, thus **opening** the filling valve 45 by means of a lever 86A. As the piston 36 lowers, the piston 18 forces the oil from the cylinder 16 past the valve 32, which is raised along a stem 89 against the action of a spring 93, into a sump 19. On the initial movement of the piston 18, it releases a foot 132 on a spring-loaded rod 118 so that a lug 116 on a floating lever 114 is moved into the **path** of a lug 119 on the lever 86A and prevents the control handle being moved again until the chamber is full, when a nut 66 on the piston rod 37 depresses the foot 132 and releases the lug 119. The travel of the piston 36 is limited by the engagement of the nut 66 with a stop ring 68 and the nut 66 can be adjusted on the screwed piston rod 37 and locked and sealed in position by screws 70 engaging slots in the piston rod threads, the bottoms of the threads being graduated. When the control handle is moved to the " draw position, the filling valve 45 is allowed to close, a discharge valve 50 is raised by a roller 83 on the lever 86A and then a cam 117 on the shaft 78 actuates a lever 112, spring-pressed rod 99 and lever 96 so that the valve 32 is lifted from its seat to allow the oil in the sump 19 to be forced back into the cylinder 16, thus raising the piston 36 and dispensing the beer through the spout 54. The movement of the control handle towards the "draw"

position and, therefore, of the lever 112 controlling the amount of **opening** of the valve 32 is limited by a graduated screw 157 which is adjusted to limit the upward travel of the valve 50. During the delivery stroke, the floating lever 114 has moved the lug 116 into the **path** of the lug 119 but this time on the opposite side and at the end of the stroke, the lug 119 is released when the oil piston 18 raises the foot 132. On initiating a **second** measuring operation, the discharge valve 50 moves down before the filling valve 45 opens so that the small quantity of beer remaining in the bore of the valve 50 below the **orifice** 52 of the spout is compressed into the measuring chamber to a pressure nearly equal to that of the incoming beer. The upper portion of the apparatus, above the stop ring 68, can be detached for cleaning and the piston 36 has a spigot 160 engaging in a socket at the top of the rod 37 so that it is easily removable. The cylinder 16 may be filled with fluid through the hollow rod 37. after removing a plug 170. A counter 199 operated by the lever 86A on the shaft 78 may be provided. A visual indicator consisting of a pin protruding from the casing, or a bell, may be provided to indicate when the chamber is full, both devices being operated by the movement of the rod 118.

PN - [FR2587182](#) A1 19870320
 PNFP - FR2587182 B1 19880108
 PR - FR19850014036 19850919
 AP - FR19850014036 19850919
 DT - *
 CT - (A1)
 [US4420097](#) A [A]; [EP0062028](#)
 A2 [A];
 [US4090650](#) A
 [A]; [US4537313](#) A [A];
 [US3428103](#) A [A]; [DE17363](#) C
 [A];
 [US4164284](#) A
 [A]; [US4449378](#) A [A];
 [US4139130](#) A
 [A]; [WO8300608](#) A1 [A];
 [US2684787](#) A [A]; [FR2367446](#)
 A1 [A]
 CCI - [A45F3/16](#)
 PA - (A1 B1)
 ELUSTONDO ANDRE [FR]
 TI - (A1)
 Belt flask equipped with a
 device for quenching the
 thirst without detaching the
 belt
 AB - (A1)
 The invention relates to a belt
 flask equipped with a device
 for quenching the thirst
 without detaching the belt.
 The subject of the invention is
 a belt flask equipped with a
 device for quenching the
 thirst without detaching the
 belt, characterised in that it
 comprises: - a flexible
 envelope 1 made from food-
 grade plastic material,
 comprising inner partitions 2
 forming baffles, a **first orifice**,
 called a **filling orifice**,
 equipped with a threaded
 endpiece 3 receiving a
 stopper, and a **second orifice**,
 called a **suction orifice**,
 connected to a flexible tube
 5 for sucking the liquid
 contained in the envelope, the
 tube being equipped at its
 free end with a suitable



closure endpiece 6; - a layer 7a, 7b of insulating plastic **foam** surrounding the said envelope and equipped with **passage** orifices for the said endpiece and tube; - a packaging 8 encasing the said layer of **foam** and consisting of a complex formed on the outside by an aluminium film and, on the inside, by thin felting; and - a bag 9 for receiving the assembly, equipped with a rapid-closure **opening** 10, 11 and with rapid-attachment tabs 13a, 13b forming a belt. Application to flasks for sportsmen, hikers, mountaineers, etc. <IMAGE>

7/8 © EPODOC / EPO

PN - [FR2907035](#) A1 20080418

PNFP - FR2907035 B1 20100827

PR - FR20060008929 20061012

AP - FR20060008929 20061012

DT - **

CT - || STSE (A1)

[EP1266696](#) A1 20021218

[XY] (TAPLAST SRL [IT])

[X] 1-6,8-11

* paragraphs [0024] - [0059];

figures 1-18 *

[Y] 7;

[US5462208](#) A 19951031

[XY] (STAHEY ROBERT E [US], et al)

[X] 1-6,8-11

* column 3, line 29 - column 10, line 13; figures 1-6 *

[Y] 7;

[US4880161](#) A 19891114

[XY] (WRIGHT H EARL [US])

[X] 1-6,8-11

* abstract *

* column 2, line 38 - column 5, line 50; figures 1-9 *

[Y] 7;

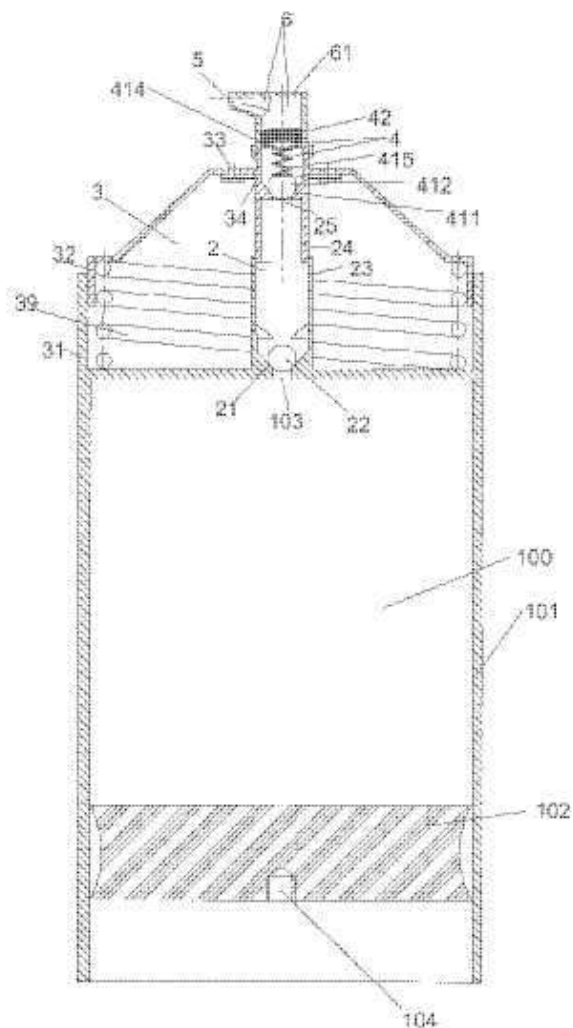
[EP1199105](#) A1 20020424

[XY] (GUALA DISPENSING SPA [IT])

[X] 1-6,8-11

* paragraphs [0019] - [0116];

figures 1-9 *



[Y] 7;
[US2003000967](#) A1 20030102
 [XY] (EHRENSPERGER MARKUS [CH],
 et al)
 [X] 1-6,8-11
 * paragraphs [0033] - [0063];
 figures 1-8 *
 [Y] 7;
[US5788124](#) A 19980804
 [Y] (BOUGAMONT JEAN-LOUIS [FR],
 et al)
 [Y] 7
 * column 2, line 36 - column 4,
 line 7; figures 1,2 *

- CCI - [B05B7/0037](#) ; [B05B11/0048](#) ;
[B05B11/3087](#)
- CCA - [B05B11/0059](#)
- PA - (A1 B1)
 SANNIER GERARD [FR]; POIZOT
 FRANCIS [FR]
- TI - (A1)
 Device for producing
 rechargeable **foam**, comprises
 reservoir to supply foaming liquid
 of variable capacity, liquid
 chamber communicating with the
 reservoir by inlet **opening** and
 with mixing chamber by
 outlet **opening**, and non-return
 valves
- AB - (A1)
 The device for producing a
 rechargeable **foam**, comprises a
 reservoir (100) to supply foaming
 liquid of variable capacity, a
 liquid chamber (2) communicating
 with the reservoir by an
 inlet **opening** and with a mixing
 chamber (4) by an outlet **opening**,
 a **first** non-return valve (21, 22)
 disposed to the inlet **opening** of
 the liquid chamber, a **second** non-
 return valve (411, 412) disposed
 to the outlet **opening**, an air
 chamber (3) comprising an inlet
 with a third non-return valve, and
 a gripping means for a user to
 compress the air- and liquid
 chamber to expel the liquid and
 the air. The device for producing a
 rechargeable **foam**, comprises a
 reservoir (100) to supply foaming

liquid of variable capacity, a liquid chamber (2) communicating with the reservoir by an inlet **opening** and with a mixing chamber (4) by an outlet **opening**, a **first** non-return valve (21, 22) disposed to the inlet **opening** of the liquid chamber, a **second** non-return valve (411, 412) disposed to the outlet **opening**, an air chamber (3) comprising an inlet with a third non-return valve, and a gripping means for a user to compress the air- and liquid chamber to expel the liquid and the air by the outlet **opening** of the liquid and the air. The **second** non-return valve comprises flexible maintenance unit in a closed position. The mixing chamber comprises a mixing unit to produce the **foam** expelled towards an outlet **orifice**, and a spring return to the air and the liquid chamber in their non-compressed positions to produce air and liquid aspiration. The **second** valve includes plastic knob maintained by elastic arms, which are fixed to the mixing chamber, a ball pushed against a truncated wall widening towards the ball and producing edges of the outlet of the liquid chamber, and a deformable part to ensure a tight closure of the outlet **opening** of the liquid. The gripping means comprises a net or a porous element disposed in a downstream of the outlet **opening** of the air and the liquid with respect to the flow towards an expulsion **orifice**. The ball is pushed by an elastic support against stop support of the mixing chamber. The elastic element is directed by a part of porous elastic **foam** disposed downstream of the outlet **opening** of air with respect to the flow through the expulsion **orifice** to achieve mixing of air and foaming liquid. The air chamber comprises two cylindrical walls centered

around a single axis and joined to a bottom of the air chamber, and a piston closing the chamber and sliding along the axis of the chamber. The piston is pushed towards the bottom of the air chamber by the user on a protruding portion of the piston or piston is moved away from the bottom of the chamber by using the spring. The air chamber includes inlets arranged on the periphery of the chamber, and before which a valve membrane is maintained by the arm support. The mixing chamber is adjacent to the liquid chamber, and a ventilation **pipe** joining the outlet of the air and the mixing chamber.

8/8 © EPODOC / EPO

PN - [EP1914003](#) A1 20080423

PR - FR20060008929 20061012

AP - EP20070291244 20071011

DT - *; Rep

CT - || STSE (A1)
[EP1266696](#) A1 20021218 [XY] (TAPLAST SRL [IT])
[X] 1,3-11
* paragraphs [0024] - [0059]; figures 1-18 *
[Y] 2;
[US5462208](#) A 19951031 [XY] (STAHLEY ROBERT E [US], et al)
[X] 1,3-11
* column 3, line 29 - column 10, line 13; figures 1-6 *
[Y] 2;
[US4880161](#) A 19891114 [XY] (WRIGHT H EARL [US])
[X] 1,3-11
* abstract *
* column 2, line 38 - column 5, line 50; figures 1-9 *
[Y] 2;
[EP1199105](#) A1 20020424 [XY] (GUALA DISPENSING SPA [IT])
[X] 1,3-11
* paragraphs [0019] - [0116]; figures 1-9 *
[Y] 2;
[US2003000967](#) A1 20030102 [XY] (EHRENSPERGER MARKUS [CH], et al)
[X] 1,3-11
* paragraphs [0033] - [0063]; figures 1-8 *
[Y] 2;
[US5788124](#) A 19980804 [Y] (BOUGAMONT JEAN-LOUIS [FR], et al)
[Y] 2
* column 2, line 36 - column 4, line 7; figures 1,2 *
CCI - [B05B7/0037](#) ; [B05B11/0048](#) ; [B05B11/3087](#)
CCA - [B05B11/0059](#)

- PA - SANNIER GERARD [FR]; POIZOT FRANCIS [FR]
- TI - Device for producing **foam**
- AB - The device for producing a rechargeable **foam**, comprises a reservoir (100) to supply foaming liquid of variable capacity, a liquid chamber (2) communicating with the reservoir by an inlet **opening** and with a mixing chamber (4) by an outlet **opening**, a **first** non-return valve (21, 22) disposed to the inlet **opening** of the liquid chamber, a **second** non-return valve (411, 412) disposed to the outlet **opening**, an air chamber (3) comprising an inlet with a third non-return valve, and a gripping means for a user to compress the air- and liquid chamber to expel the liquid and the air. The device for producing a rechargeable **foam**, comprises a reservoir (100) to supply foaming liquid of variable capacity, a liquid chamber (2) communicating with the reservoir by an inlet **opening** and with a mixing chamber (4) by an outlet **opening**, a **first** non-return valve (21, 22) disposed to the inlet **opening** of the liquid chamber, a **second** non-return valve (411, 412) disposed to the outlet **opening**, an air chamber (3) comprising an inlet with a third non-return valve, and a gripping means for a user to compress the air- and liquid chamber to expel the liquid and the air by the outlet **opening** of the liquid and the air. The **second** non-return valve comprises flexible maintenance unit in a closed position. The mixing chamber comprises a mixing unit to produce the **foam** expelled towards an outlet **orifice**, and a spring return to the air and the liquid chamber in their non-compressed positions to produce air and liquid aspiration. The **second** valve includes plastic knob maintained by elastic arms, which are fixed to the mixing chamber, a ball pushed against a truncated wall widening towards the ball and producing edges of the outlet of the liquid chamber, and a deformable part to ensure a tight closure of the outlet **opening** of the liquid. The gripping means comprises a net or a porous element disposed in a downstream of the outlet **opening** of the air and the liquid with respect to the flow towards an expulsion **orifice**. The ball is pushed by an elastic support against stop support of the mixing chamber. The elastic element is directed by a part of porous elastic **foam** disposed downstream of the outlet **opening** of air with respect to the flow through the expulsion **orifice** to achieve mixing of air and foaming liquid. The air chamber comprises two cylindrical walls centered around a single axis and joined to a bottom of the air chamber, and a piston closing the chamber and sliding along the axis of the chamber. The piston is pushed towards the bottom of the air chamber by the user on a protruding portion of the piston or piston is moved away from the bottom of the chamber by using the spring. The air chamber includes inlets arranged on the periphery of the chamber, and before which a valve membrane is maintained by the arm support. The mixing chamber is adjacent to the liquid chamber, and a ventilation **pipe** joining the outlet of the air and the mixing chamber.

[SS 10] 8 and (inject+ or insert+ or introduc+)

Results in EPODOC 131

[SS 11] 10 and fluid

Results in EPODOC 16

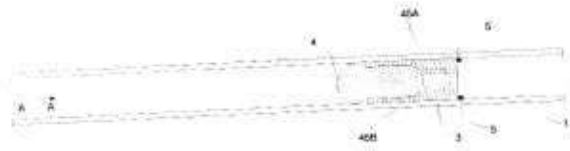
[SS 12] ..li



PN - [JP2010032003](#) A 20100212
 PR - JP20080196581 20080730
 AP - JP20080196581 20080730
 DT - I
 FI - F16L37/12; F16L37/138
 FT - 3J106/AA04; 3J106/AB01; 3J106/BA01; 3J106/BB01; 3J106/BC04; 3J106/BD01;
 3J106/BE12; 3J106/CA02; 3J106/EA03; 3J106/EB05; 3J106/EC01; 3J106/EC07;
 3J106/ED33
 PA - TOYODA GOSEI KK
 TI - CONNECTOR
 AB - PROBLEM TO BE SOLVED: To provide a connector 1 capable of maintaining high sealability, without rusting a seal surface Pb of a **pipe** P abutting on a **first** seal member 17.
 - SOLUTION: This connector 1 connects the **pipe** P by **inserting** the **pipe** P into its connection hole. The connector 1 has the **first** seal member 17 and a stopper ring 18 in the connection hole 16 of a connector body 10, and also has a **second** seal member 20 interposed between an **opening** wall surface of the connector body 10 and a wall surface of a **fluid** device. The **second** seal member 20 has a seal base part 20a formed of sponge of independent **foam** and compressed by the **opening** wall surface of the connector body 10 and the wall surface of the **fluid** device, and a through-hole 20b formed in the seal base part 20a and penetrating the **pipe** P, and seals a **passage** reaching the **first** seal member 17 from an external part.
 - COPYRIGHT: (C)2010,JPO&INPIT

2/16 © EPODOC / EPO

PN - [US2002116820](#) A1 20020829
 PNFP - US6434825 B1 20020820
 PR - GB20010003055 20010207
 AP - US20010904500 20010716
 DT - **
 CT - || STSE (B1)
[US3659305](#) A 19720502 [
] (MARVIN D POWERS);
[US4663795](#) A 19870512 [
] (NEFF LAURENCE M);
[US6062264](#) A 20000516 [
] (BRITISH GAS PLC [GB]);
[US6102624](#) A 20000815 [
] (BRITISH GAS PLC [GB])
 CCI - [E21B23/08](#) ; [F16L55/18](#) ;
[F16L55/38](#)
 CCA - [Y10T29/49405](#) ;
[Y10T29/49412](#) ;
[Y10T29/49432](#) ;
[Y10T29/49732](#)
 PA - (B1)
 PETROLEO BRASILEIRO SA [US]
 TI - (A1 B1)
 METHOD OF DIMINISHING THE



CROSS SECTION OF
AN **OPENING** OF A HOLLOW
DEVICE LOCATED IN A
FLOW **PIPE**

AB

- (A1)

A method of diminishing the size of the cross section of an **opening** of a **first** hollow device located in an undersea flow **pipe** through which passes a **fluid** flow uses a **second** hollow device to be **inserted** into said undersea flow **pipe**, said **second** hollow device being provided with a leading portion and a trailing portion, said leading portion being of a smaller external **diameter** than said trailing portion, said **second** hollow device being provided with a **passage** extending longitudinally therethrough. Next a **foam** pig is **inserted** immediately after said **second** hollow device. Urged by said **fluid** flow, said **foam** pig displaces said **second** hollow device along said undersea flow **pipe**, until said **second** hollow device encounters said **first** hollow device. Said leading portion of said **second** hollow device is then **inserted** into an **opening** of said **first** device, thereby diminishing the size of a cross section of said **opening**.

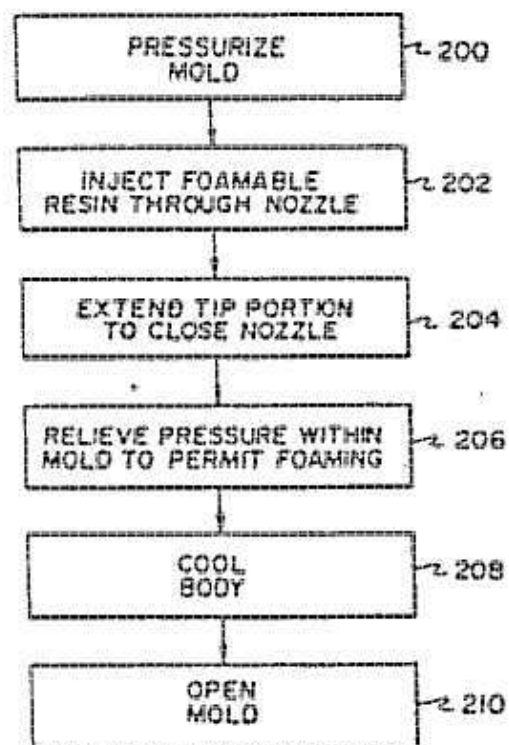
- (B1)

A method of diminishing the size of the cross section of an **opening** of a **first** hollow device located in an undersea flow **pipe** through which passes a **fluid** flow uses a **second** hollow device to be **inserted** into the undersea flow **pipe**, the **second** hollow device being provided with a leading portion and a trailing portion, the leading portion being of a smaller

external **diameter** than the trailing portion, the **second** hollow device being provided with a **passage** extending longitudinally therethrough. Next a **foam** pig is **inserted** immediately after the **second** hollow device. Urged by the **fluid** flow, the **foam** pig displaces the **second** hollow device along said undersea flow **pipe**, until the **second** hollow device encounters the **first** hollow device. The leading portion of the **second** hollow device is then **inserted** into an **opening** of the **first** device, thereby diminishing the size of a cross section of the **opening**.

3/16 © EPODOC / EPO

- PN - [US4942006](#) A 19900717
- PR - US19880277233 19881201
- AP - US19880277233 19881201
- DT - *
- CT - [US3966372](#) A []; [US4101617](#) A [];
[US4106887](#) A []; [US4129635](#) A [];
[US4140672](#) A []; [US4333608](#) A []
- CCI - [B29C45/1735](#) ;
[B29C45/2806](#) ; [B29C44/105](#)
- CCA - [Y10S425/812](#)
- PA - LADNEYMICHAEL[US]
- TI - Method of and apparatus for **injection** molding with pressurized- **fluid** assist
- AB - An **injection** molding method and nozzle for use therein wherein **first** and **second** variable pressures are applied to a piston of a valve mechanism of the nozzle so that a differential **fluid** pressure on the piston causes a tip portion of the valve mechanism to alternately open and close. In this **way**, the tip portion communicates



the flow of resin from a nozzle body of the nozzle to an **injection** aperture of a mold. Differential pressure on the piston prevents a **fluid** which distributes the molten resin over the interior surfaces of the mold from entering the flow **path** of the molten resin in the nozzle body. The **fluid** preferably is a gas, such as nitrogen. Preferably, the piston is mounted for reciprocating movement within the nozzle body and the **first** pressure is provided by the resin during resin **injection** and the **second** pressure is partially applied by the nitrogen gas. Preferably, the valve mechanism includes a counterbalance mechanism which is set to prevent **fluid entry** into the mold until the tip portion of the valve mechanism is closed. The resulting article is then cooled to a temperature below the softening point of the resin, the pressure is relieved within the article and the mold is opened to remove the article. The nozzle may also be utilized in making structural **foam** articles from a foamable resin. The pressure within the mold is relieved to permit foaming by the foamable resin after **injection** of the foamable resin.

4/16 © EPODOC / EPO

PN - [NZ527567](#) A 20050225
 PR - WO2001BR00160 20011228; GB20010003055 20010207
 AP - NZ20010527567 20011228
 DT - I
 CCI - [E21B23/08](#) ; [F16L55/18](#) ; [F16L55/38](#)
 CCA - [Y10T29/49405](#) ; [Y10T29/49412](#) ; [Y10T29/49432](#) ; [Y10T29/49732](#)
 PA - PETROLEO BRASILEIRO S

- TI - Method of diminishing the size of the cross section of an **opening** of a hollow device located in a flow **pipe**
- AB - A method of diminishing the size of the cross section of an **opening** of a **first** hollow device (3) is disclosed. The **first** hollow device is located in an undersea flow **pipe** (1) through which passes a **fluid** flow. **First** a **second** hollow device is **inserted** into said undersea flow **pipe**, the **second** hollow device having a leading portion (45A) and a trailing portion (45B). Next a **foam** pig (4) is **inserted** immediately after the **second** hollow device. Urged by the flow, the **foam** pig displaces the **second** hollow device along the undersea flow **pipe**, until the latter encounters the **first** hollow device. The leading portion of the **second** hollow device is then **inserted** into the **opening** of the **first** device, thereby diminishing the size of the cross section of this **opening**.

5/16 © EPODOC / EPO

- PN - [NL8902835](#) A 19910617
- PR - NL19890002835 19891116
- AP - NL19890002835 19891116
- DT - *; Rep
- CCI - [A61F5/445](#)
- PA - SPRUYTHILLEN BV
- TI - Expandable stop for **passage** in human body - has bottom part filled with super absorbent material so moisture is absorbed to complete sealing effect
- AB - Stoma stop (9) has a **second** part (3) which swells after the effect of **fluid entry** of the **first** part (2) which is in **fluid** contact, and has a superabsorbent material content (14). Stoma stop (9) has a **first** part (2) e.g. of polyurethane **foam** with open cells. **Second** part (3) contains a superabsorbent (4), e.g. (salsorb 84) in powder form. Stoma stop further has a skin plate (10) and is **inserted** into intestinal cavity (11). Moisture effect will swell the **first** part, and swelling of part (4) will complete the sealing effect of the stoma stop.

6/16 © EPODOC / EPO

- PN - [JP2007137497](#) A 20070607
- PR - JP20050336413 20051121
- AP - JP20050336413 20051121
- DT - I
- CCI - [B05B11/3028](#) ; [B05B11/3087](#)
- FI - B05B11/00&101Z; B05B11/06&J; B65D83/00&K; F04B43/02&B; F04B9/14&B
- FT - 3E014/PA01; 3E014/PB01; 3E014/PB04; 3E014/PC03; 3E014/PD11; 3E014/PD15; 3E014/PE01; 3E014/PE02; 3E014/PE03; 3E014/PE09; 3E014/PE14; 3E014/PE15; 3E014/PF01; 3H075/AA10; 3H075/BB04; 3H075/DB14; 3H077/AA01; 3H077/AA12; 3H077/BB03; 3H077/CC02; 3H077/CC07; 3H077/CC08; 3H077/CC17; 3H077/DD04; 3H077/FF06; 3H077/FF07
- PA - CANYON CORP
- TI - **FOAM** DISCHARGING TYPE PUMP DISPENSER
- AB - PROBLEM TO BE SOLVED: To provide a **foam** discharging type pump dispenser which has less wear while having no sliding sections, and also, is structurally simple as well.
- SOLUTION: This **foam** discharging type pump dispenser 1 mixes a liquid L in a container 2 and air A on the outside of the container. The **foam** discharging type

pump dispenser 1 has a liquid pumping means for discharging the liquid L to the outside by sucking it up through an **introduction** flow **passage** S1 and also, through a discharging flow **passage** S3, and an air pumping means for taking in the air A and feeding it into the discharging flow **passage** S3. In this case, the liquid pumping means has a liquid pumping section 3, a **first** check valve 4 which is provided on the border between the **introduction** flow **passage** S1 and a pump space S21, and a **second** check valve 5 which is provided on the border between the pump space 21 and the discharging flow **passage** S3. Also, the air pumping means has an air pumping section 6, and a third check valve 7 which is provided on a suction **port** for the air A. Then, a fourth check valve 15 is provided so that the mixed **fluid** of the liquid L and the air A may not enter a pump space S22 from the discharging flow **passage** S3.

- COPYRIGHT: (C)2007,JPO&INPIT

7/16 © EPODOC / EPO

PN - [JPH07166531](#) A 19950627

PR - JP19930318341 19931217

AP - JP19930318341 19931217

DT - I

FI - E02D3/12&101

FT - 2D040/AB01; 2D040/BB09; 2D040/CA10; 2D040/CB03; 2D040/CD09; 2D040/DA02; 2D040/DA03

PA - KFC LTD

TI - CO-EXTRUDING **PIPE** FOR TWO-LIQUID **FOAM** HARDENING TUNNEL NATURAL GROUND STABILIZING **INJECTION** MATERIAL

AB - PURPOSE: To prevent an **injection** material from being foamed in an internal **passage** at the final stage of **injection** by extruding two liquid compositions different in composition through extruding passages separated from each other. CONSTITUTION: A co-extruding **pipe** I is constituted of inner/outer double **pipes** 11, 12, the **first** composition is **injected** from an **injection port** 13 and flows out through the **passage** 11 in the extruding direction, and the **second** composition is **injected** from an **injection port** 14 and flows out through the **passage** 12 separately. The **first** and **second** compositions of an **injection** material are extruded without being mixed in the co-extruding **pipe** 1. Even when the **injection** quantity of the **injection** material is reduced at the final stage of **injection**, the foaming of the **injection** material in the co-extruding **pipe** 1 is prevented, and the foaming region of the **injection** material in the downstream side **passage** from the outlet end of the co-extruding **pipe** 1 is rarely corroded in the **pipe** 1. The internal **passage** of the **pipe** I is narrowed and lengthened by the inner/ outer double **pipes** 11, 12, thus the corrosion suppressing effect of the **injection foam** material region is improved by the throttle valve action of the **passage** and an increase of the **fluid** resistance.

8/16 © EPODOC / EPO

PN - [GB1508140](#) A 19780419

PR - GB19740053041 19751103

AP - GB19740053041 19751103

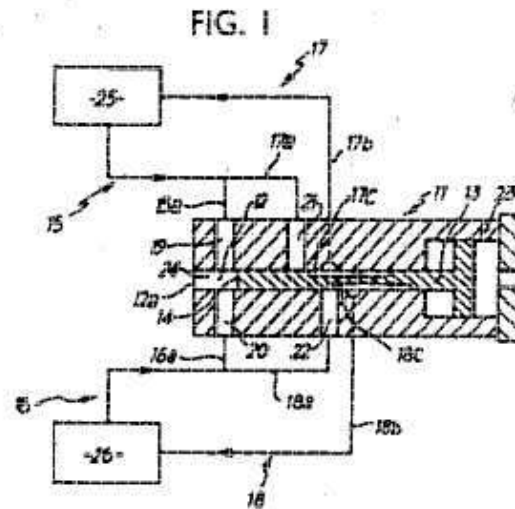
DT - *

CCI - [B29B7/7663](#)

PA - VIKING ENG CO LTD

TI - MIXING HEAD FOR **FOAM** MANUFACTURE

AB - 1508140 Mixing apparatus VIKING ENG CO Ltd 3 Nov 1975 [7 Dec 1974] 53041/74
 Heading B1C A mixing head for mixing together the individual components of a **foam**-forming formulation the components being supplied thereto at high pressure, comprises a body part 11, a ram 13 movable in a bore 12 in said body part between **first** and **second** positions spaced axially of such bore, that end of the bore disposed forwardly of the ram in its retracted position defining a mixing chamber 24 for placing in immediate **fluid** flow connection with a mould, feed ports in the wall of the mixing chamber adapted to be uncovered by the ram in its retracted position, a respective pressure-controlled feed valve 19, 20 for each feed **port**, each feed valve being in **fluid** flow connection with a component feed circuit 15, 16, and a recirculation circuit 17, 18 for each component, each recirculation circuit comprising a pressure-controlled recirculation valve 21, 22 and a shut-off valve in series arranged in **fluid** flow connection with the component feed circuit at a position upstream of the aforesaid feed valve the shutoff valve being effective to permit **passage** of



component materials through the recirculation circuits automatically on closure of the feed ports and the feed and recirculation valves being individually adjustable as to the extent of the **opening** thereof to permit control of the pressure drop thereat and the exit velocity therefrom. As described the shut-off valve consists of the ram 13 itself which has axially directed channels 17c, 18c adapted to provide a **path** for the components between parts 17a, 17b, 18a, 18b of the recirculation circuits when the ram is in its forward position. The pressure-controlled valves 19..22 may be diesel nozzles or needle valves. The rear end of the ram is enlarged to form a piston in a hydraulic piston and cylinder arrangement 23 for reciprocating the ram in suitably timed relation for **injecting** the materials into a mould. In an alternative construction of the shut-off valve the ram is provided with peripheral channels adapted to uncover and provide communication between peripherally spaced recirculation ports in the wall of the bore.

PN - [GB1448144](#) A 19760902

PR - SE19720011513 19720906

AP - GB19730041626 19730904

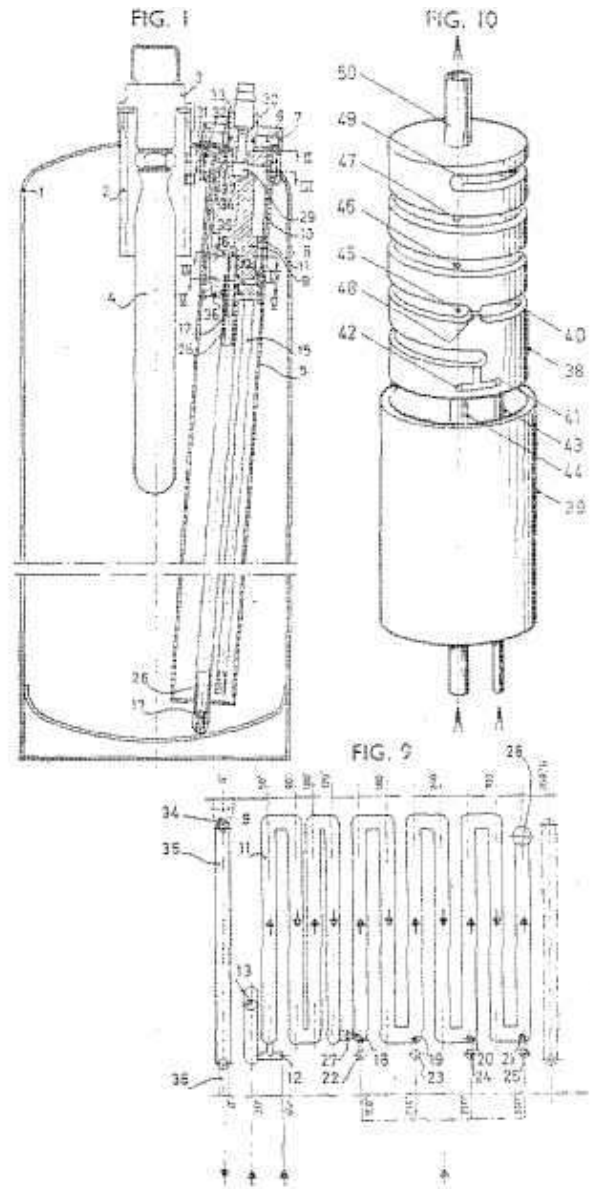
DT - **

CCI - [B01F5/0604](#) ; [A62C5/002](#) ;
[B01F5/0656](#) ; [B01J19/06](#)

PA - INCENTIVE RES & DEV AB [SE]

TI - APPARATUS FOR FORMING A LIQUID GEL OR FOAM

AB - 1448144 **Fluid** mixing apparatus INCENTIVE RESEARCH & DEVELOPMENT AB 4 Sept 1973 [6 Sept 1972] 41626/73 Heading B1C In an apparatus for forming a liquid gel by continuous-flow mixing of liquid and liquid gel former, the constituents are **introduced** through two inlet ports at the upstream end of an elongate mixing channel having a single outlet and liquid is also **introduced** at further inlet ports along the length of the channel, the downstream end of which is open at the outlet for delivery of the formed gel. A constriction is provided in the channel immediately before the **first** of said further inlet ports. In a **first** embodiment, Fig. 1, of a fire extinguisher incorporating the apparatus, the channel follows a meandering **path** on the surface of a central cylindrical body 9 contained within a tubular sleeve 10. The opened-out envelope surface of the body 9 is shown in Fig. 9. Water enters at upstream inlet **port** 13 and at further inlet ports 18-21 with the constriction at 27. Gel former enters at inlet **port** 12. The body 9 and sleeve 10 are contained within a gel former container 5 which is itself supported within water tank 1. On exhausting gas cylinder 4 into the water tank,



water is forced up concentric tubes 17, 26 to the water inlet ports. Gas also passes into container 5 through passages 31, 32, 34 (by rupturing diaphragm 37) 35 and 36 to pressurise the gelformer. Mixed water gel escapes from the channel through outlet **port** 28 to tube 30. In the **second** embodiment, Fig. 10, the channel forms a helical **path** on the body 38 the constriction being provided at 48.

10/16 © EPODOC / EPO

PN - [GB1452232](#) A 19761013

PR - US19730397262 19730914

AP - GB19740038429 19740903

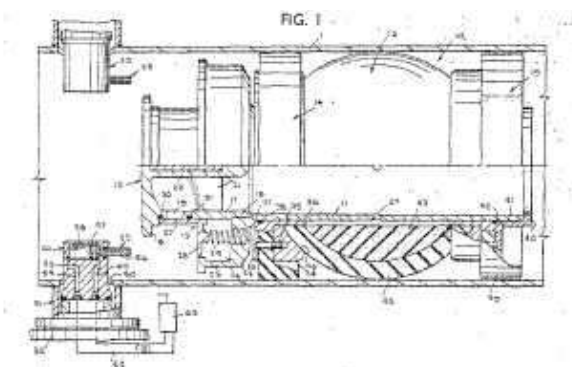
DT - *

CCI - [F16L55/1283](#)

PA - SAWYER W A

TI - **PIPELINE PLUGGING**
APPARATUS AND METHOD

AB - 1452232 **Pipeline** pig W A
SAWYER 3 Sept 1974 [14 Sept 1973] 38429/74 Heading F2P
A **pipeline** pig 10 comprises a tubular body 11, closed at the forward end by a head member 12, an integral **fluid** by pass valve 13, a pair of cup type seal assemblies 14 and 15 and an intermediate expansible seal assembly 16. The integral **fluid** by-pass valve 13, comprises a sleeve 27 moveable between a **first** position (Fig. 1) in which a **port** 19 is covered and a **second** position (Fig. 2) in which said **port** is uncovered thus permitting **pipeline fluid** to flow through the pig. The valve is biased towards said **first** position by a spring 29. With the valve 13 in said **first** position **fluid** pressure can act on said cup type seal assemblies 14 and



15 to push the pig along the **pipeline**. When a section of **pipeline** is to be replaced three stations may be established, one upstream of said section one downstream and one intermediate said other two stations. Each station is provided with means, for stopping a pig, comprising at least one pin 53 which may be moved from a retracted position, in which the flow area of the **pipe** line 1 is uninterrupted, to an extended position as shown in Fig. 1. A plunger 55 comprising a rod portion 56 and piston 57 movable in chamber 58 can be extended or retracted by applying pressurised **fluid** to one side or other of the piston 57 through ports 59 or 60 the overall operation of the plunger being controlled by a valve 63. Said plunger may be adapted for mechanical or electrical operation. The stop means is supported in a flange 51, welded to the **pipe** at a hole made by hot tapping methods. Two pigs are **introduced** into the **pipeline**, each with their integral **fluid** by-pass valves closed, and allowed to move along the **pipeline** due to the action of **fluid** pressure on their cup type seals. The **first** pig is allowed to pass the upstream station, which has its pins 53 retracted, and is arrested at said intermediate station which has its pins 53 and plungers 55 extended as in Fig. 1. Said plungers engage a flange 28 and cause the valve 13 to open thus allowing **fluid** to flow through the pig. The **second** pig is then similarly arrested at said upstream station. The

plungers 55, at the upstream station are then retracted to close the valve 13 of the **second** pig and pins 53 are further extended to lock said **second** pig against movement in either the upstream or downstream direction. Plungers 55 and pins 53 are then retracted at said intermediate station thus allowing said **first** pig to move towards said downstream station under the action of an inert **fluid introduced** through a vent between said upstream and intermediate stations. The **first** pig is then arrested and locked at said downstream station where the plungers 55 are retracted to maintain valve 13 in the closed position. When the pigs are at rest, differential **fluid** pressure across each pig causes the cup like seal assemblies 14 and 15 to move axially on the tubular body 11 to compress the seal assembly 16 which expands radially to seal the **pipe**. Seal assembly 16 may comprise a core 43 of soft material such as polyurethane **foam**, surrounded by an outer layer 44 of a harder polyurethane or other suitable material. After the section of **pipeline** has been replaced, the valve 13 of the **second** pig is opened and the new section of **pipeline** is allowed to fill, gases being vented through a vent in the section. When the new section of **pipeline** is full of **pipeline fluid**, the plungers 55 and pins 53 at said downstream station are retracted and said **first** pig allowed to travel down the **pipeline** to receiving

traps. Said **second** pig is then similarly released. A similar method involves the use of only two stations, one upstream and one downstream of the section of **pipeline** to be replaced. In this case fluids trapped between the pigs have to be pumped out.

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- PN - [GB2372055](#) A 20020814
- PNFP - GB2372055 B 20040922
- PR - GB20010003055 20010207
- AP - GB20010003055 20010207
- DT - *; Rep
- CT - || STSE (A B)
[GB2280460](#) A 19950201 [] (ALTRA CONSULTANTS LIMITED [GB], et al);
[US6006828](#) A 19991228 [] (SENSOR DYNAMICS LTD [GB]);
[WO9739273](#) A1 19971023 [] (PETROLEO BRASILEIRO SA [BR], et al)
- CCI - [E21B23/08](#) ; [F16L55/18](#) ; [F16L55/38](#)
- CCA - [Y10T29/49405](#) ; [Y10T29/49412](#) ; [Y10T29/49432](#) ; [Y10T29/49732](#)
- PA - (A B)
 PETROLEO BRASILEIRO SA [BR]
- TI - (A)
 Method of **inserting** a device in a **pipe** to reduce the internal cross-section of the **pipe**
 - (B)
 Method of diminishing the cross section of an **opening** of a hollow device located in a flow **pipe**
- AB - (A)
 A method of reducing the **opening** of a **first** flow modifying device (3) set in a **pipe** (1) involves **introducing** a **second** device (45) into the **pipe** (1) ahead of a **foam** pig (4). The **fluid** flow in the **pipe** (1) moves the **foam** pig (4), which inturn moves the **second** device (45) along the **pipe** (1) until it engages with the **first** flow modifying device (3), reducing it's internal cross-section. The **foam** pig (4) then passes through the **opening** in the device (34) by the continuing action of **fluid** pressure.

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PN - [EP0321160](#) A2 19890621

PNFP - EP0321160 A3 19900627
 - EP0321160 B1 19930512
 - EP0321160 B2 20000802

PR - US19870133925
 19871216; US19880277233
 19881201

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DT - *; Rep

CT - || STSE (A3)
[DE2716817](#) A1 19780824
 [XD] (ASAHI DOW LTD);
[US2940123](#) A 19600614
 [X] (HANS BECK, et al);
[WO8905226](#) A1 19890615
 [E] (HETTINGA SIEBOLT [US]);
[US4333608](#) A 19820608
 [AD] (HENDRY JAMES W);
[US4129635](#) A 19781212
 [AD] (YASUIKE AKIO, et al)

CCI - [B29C45/1735](#) ;
[B29C45/2806](#) ; [B29C44/105](#)

PA - (A2)
 LADNEYMICHAEL [US]
 - (B2)
 MELEA LTD [GI]

TI - (A2)
Injection molding method and
 nozzle for use therein.
 - (A3 B1)
INJECTION MOLDING METHOD
 AND NOZZLE FOR USE THEREIN
 - (B2)
Injection molding method and
 nozzle for use therein

AB - (A2)
 An **injection** molding method
 and nozzle for use therein
 wherein **first** and **second**
 variable pressures are
 applied to a piston of a valve
 mechanism of the nozzle so
 that a differential **fluid**
 pressure on the piston causes
 a tip portion of the valve
 mechanism to alternately
 open and close. In this **way**,
 the tip portion communicates
 the flow of resin from a nozzle
 body of the nozzle to
 an **injection** aperture of a

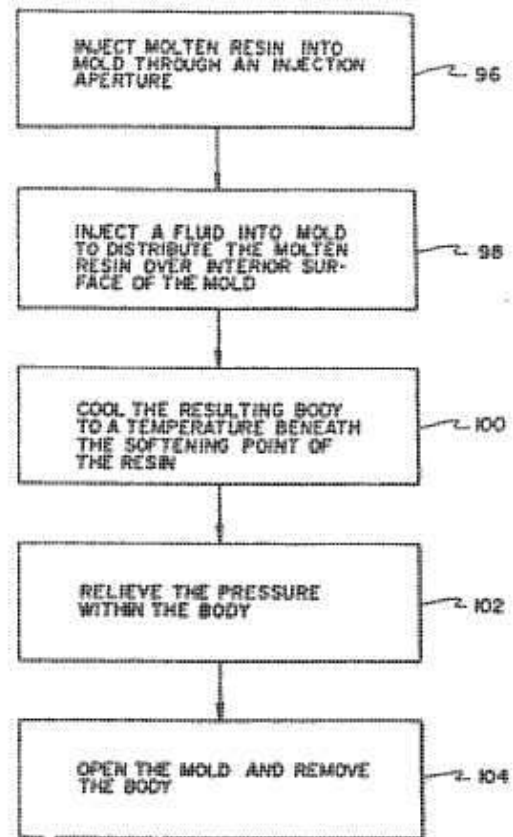
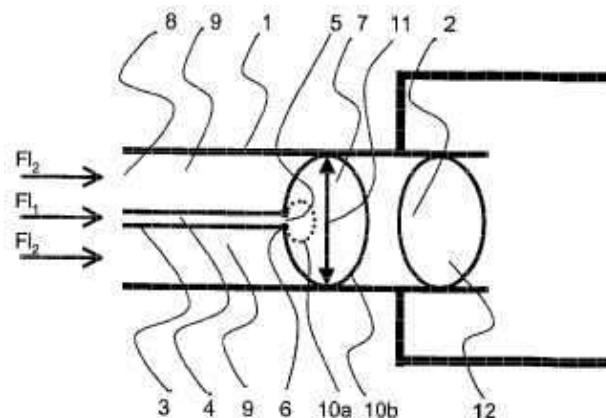


Fig 2

mold. Differential pressure on the piston prevents a **fluid** which distributes the molten resin over the interior surfaces of the mold from entering the flow **path** of the molten resin in the nozzle body. The **fluid** preferably is a gas, such as nitrogen. Preferably, the piston is mounted for reciprocating movement within the nozzle body and the **first** pressure is provided by the resin during resin **injection** and the **second** pressure is partially applied by the nitrogen gas. Preferably, the valve mechanism includes a counterbalance mechanism which is set to prevent **fluid entry** into the mold until the tip portion of the valve mechanism is closed. The resulting article is then cooled to a temperature below the softening point of the resin, the pressure is relieved within the article and the mold is opened to remove the article. The nozzle may also be utilized in making structural **foam** articles from a foamable resin. The pressure within the mold is relieved to permit foaming by the foamable resin after **injection** of the foamable resin.

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 PN - [WO03045541](#) A2 20030605
 PNFP - WO03045541 A3 20040422
 PR - DE2001156304
 20011119; DE2002100148
 20020104
 AP - WO2002DE04260 20021119
 DT - *; Rep
 CT - |EP| ISR (A3)
[FR2575671](#) A1 19860711
 [X] (COMMISSARIAT ENERGIE
 ATOMIQUE [FR])



[X] 1-3
 * the whole document *;
[DE4441811](#) A1 19960530
 [A] (DESOWAG
 MATERIALSCHUTZ GMBH [DE])
 [A] 1
 * figure 1; claim 1 *;
[WO0136105](#) A1 20010525
 [A] (AURA TEC CO LTD [JP], et
 al)
 [A] 1,12
 * abstract *

- CCI - [B01F5/0406](#) ; [B01F5/0453](#) ;
[B01F5/046](#) ; [B01J19/0093](#) ;
[B01F13/0059](#) ; [B01F3/04446](#) ;
[B22F3/1125](#) ; [B01J35/04](#) ;
[B01F3/0807](#) ; [C03B19/08](#)
- CLC - [B22F2999/00](#) , [B22F3/1125](#) ,
[B22F3/22](#) , ADD
- CCA - [B01J2219/00788](#) ;
[B01J2219/00853](#) ;
[B01J2219/00889](#) ;
[B01J2219/00891](#) ;
[B22F2999/00](#)
- PA - (A2 A3)
 MIR CHEM GMBH [DE]; PLATH
 JOERG PETER [DE]; BUHLERT
 MAGNUS [DE]
- TI - (A2 A3)
 DEVICE AND METHOD FOR
 PRODUCING **FOAM**
- AB - (A2 A3)
 The invention relates to a
 method and a device for
 producing **foam**. According to
 the invention, a **fluid** (F1)
 passes through a channel-
 shaped feeding chamber.
 Said **fluid** (F1) exits via
 an **opening** on one end of said
 chamber and arrives in a
 formation chamber
 surrounding the **opening** in
 order to form **fluid** deposits
 (F1). A **second fluid** (F2)
 is **introduced** into the
 formation chamber in such
 a **way** that it passes
 the **opening**. **Fluid** deposits
 are formed in the **second fluid**
 passing the **opening** when
 the **first fluid** (F1) exits from

the feeder chamber via the **opening**. An expansion of the deposits is limited by the size of the formation chamber in the region of the **opening**, said size of the formation chamber in the region of the **opening** being smaller or equal to an expansion of a bubble/drop of the **first fluid** (FI1) in a free-flow of the **second fluid** (FI2). In order to form the **foam**, the **second fluid** (FI2) flows with the deposits in a collecting chamber.

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PNFP - CA2437730 C 20080401

PR - WO2001BR00160 20011228; GB20010003055 20010207

AP - CA20012437730 20011228

DT - I

CCI - [E21B23/08](#) ; [F16L55/18](#) ; [F16L55/38](#)

CCA - [Y10T29/49405](#) ; [Y10T29/49412](#) ; [Y10T29/49432](#) ; [Y10T29/49732](#)

PA - (A1 C)
PETROLEO BRASILEIRO SA [BR]

TI - (A1 C)
METHOD OF DIMINISHING THE SIZE OF THE CROSS SECTION OF AN **OPENING** OF A HOLLOW DEVICE LOCATED IN A FLOW **PIPE**

AB - (A1 C)
A method of diminishing the size of the cross section of an **opening** of a **first** hollow device (3) is disclosed. The **first** hollow device (3) is located in an undersea flow **pipe** (1) through which passes a **fluid** flow. **First** a **second** hollow device (45) is **inserted** into said undersea flow **pipe** (1), the **second** hollow device (45) having a leading portion (45A) and a trailing portion (45B). Next a **foam** pig (4) is **inserted** immediately after the **second** hollow device. Urged by the flow, the **foam** pig (4) displaces the **second** hollow device (45) along the undersea flow **pipe** (1), until the latter encounters the **first** hollow device. The leading portion (45A) of the **second** hollow device (45) is then **inserted** into the **opening** of the **first** device (3), thereby diminishing the size of the cross section of this **opening**.

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19881201

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DT - I

CCI - [B29C45/1735](#) ;
[B29C45/2806](#) ; [B29C44/105](#)

PA - LADNEYMICHAEL [US]

TI - **INJECTION MOLDING METHOD AND NOZZLE FOR USE THEREIN**

AB - P-360 **INJECTION MOLDING METHOD AND NOZZLE FOR USE THEREIN** An **injection** molding method and nozzle for use therein wherein **first** and **second** variable pressures are applied to a piston of a valve mechanism of the nozzle so that a differential **fluid** pressure on the piston causes a tip portion of the valve mechanism to alternately open and close. In this **way**, the tip portion communicates the flow of resin from a nozzle body of the nozzle to an **injection** aperture of a mold. Differential pressure on the piston prevents a **fluid** which distributes the molten resin over the interior surfaces of the mold from entering the flow **path** of the molten resin in the nozzle body. The **fluid** preferably is a gas, such as nitrogen. Preferably, the piston is mounted for reciprocating movement within the nozzle body and the **first** pressure is provided by the resin during resin **injection** and the **second** pressure is partially applied by the nitrogen gas. Preferably, the valve mechanism includes a counterbalance mechanism which is set to prevent **fluid entry** into the mold until the tip portion of the valve

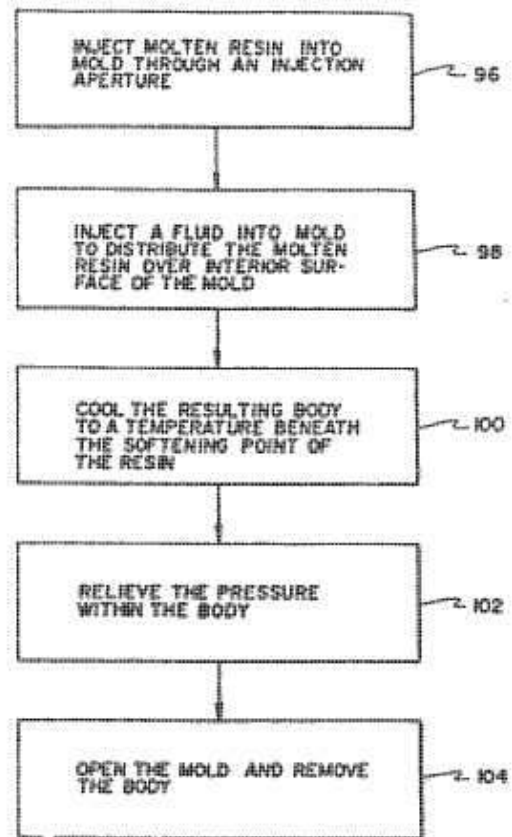


Fig. 2

mechanism is closed. The resulting article is then cooled to a temperature below the softening point of the resin, the pressure is relieved within the article and the mold is opened to remove the article. The nozzle may also be utilized in making structural **foam** articles from a foamable resin. The pressure within the mold is relieved to permit foaming by the foamable resin after **injection** of the foamable resin.

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PR - GB20010003055 20010207

AP - WO2001BR00160 20011228

DT - **

CT - |US| ISR (A3)
[US5590689](#) A 19970107 [A] (TOYODA SHIGERU [JP], et al);
[US5873390](#) A 19990223 [A] (SATAKE SHINOBU [JP], et al);
[US5230842](#) A 19930727 [A] (MUNDE BRUCE A [US])

CCI - [E21B23/08](#) ; [F16L55/18](#) ; [F16L55/38](#)

CCA - [Y10T29/49405](#) ; [Y10T29/49412](#) ; [Y10T29/49432](#) ; [Y10T29/49732](#)

PA - (A2 A3)
 PETROLEO BRASILEIRO SA [BR]

TI - (A2 A3)
 METHOD OF DIMINISHING THE SIZE OF THE CROSS SECTION OF AN **OPENING** OF A HOLLOW DEVICE LOCATED IN A FLOW **PIPE**

AB - (A2)
 A method of diminishing the size of the cross section of an **opening** of a **first** hollow device (3) is disclosed. The **first** hollow device (3) is located in an undersea flow **pipe** (1) through which passes a **fluid** now. **First** a **second** hollow device (45) is **inserted** into said undersea flow **pipe** (1), the **second** hollow device (45) having a leading portion (45A) and a trailing portion (45B). Next a **foam** pig (4) is **inserted** immediately after the **second** hollow device. Urged by the flow, the **foam** pig (4) displaces the **second** hollow device (45) along the undersea flow **pipe** (1), until the latter encounters the **first** hollow device. The leading portion (45A) of the **second** hollow device (45) is then **inserted** into the **opening** of the **first** device (3), thereby diminishing the size of the cross section of this **opening**.
 - (A3)
 A method of diminishing the size of the cross section of an **opening** of a **first** hollow device (3) is disclosed. The **first** hollow device (3) is located in an undersea flow **pipe** (1) through which passes a **fluid** flow. **First** a **second** hollow device (45) is **inserted** into said undersea flow **pipe** (1), the **second** hollow device (45) having a leading

portion (45A) and a trailing portion (45B). Next a **foam** pig (4) is **inserted** immediately after the **second** hollow device. Urged by the flow, the **foam** pig (4) displaces the **second** hollow device (45) along the undersea flow **pipe** (1), until the latter encounters the **first** hollow device. The leading portion (45A) of the **second** hollow device (45) is then **inserted** into the **opening** of the **first** device (3), thereby diminishing the size of the cross section of this **opening**.

[SS 12]