



- (51) **International Patent Classification:**
E21B 41/00 (2006.01) *E21B 21/06* (2006.01)
- (21) **International Application Number:**
PCT/EP2017/058486
- (22) **International Filing Date:**
10 April 2017 (10.04.2017)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
20160634 15 April 2016 (15.04.2016) NO
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- (81) **Designated States** (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA,

MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to the identity of the inventor (Rule 4.17(i))
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))
- of inventorship (Rule 4.17(iv))

Published:

- with international search report (Art. 21(3))

(54) **Title:** HYDRAULIC MASS TRANSPORT SYSTEM AND METHOD FOR TRANSPORTATION OF DRILLING WASTE

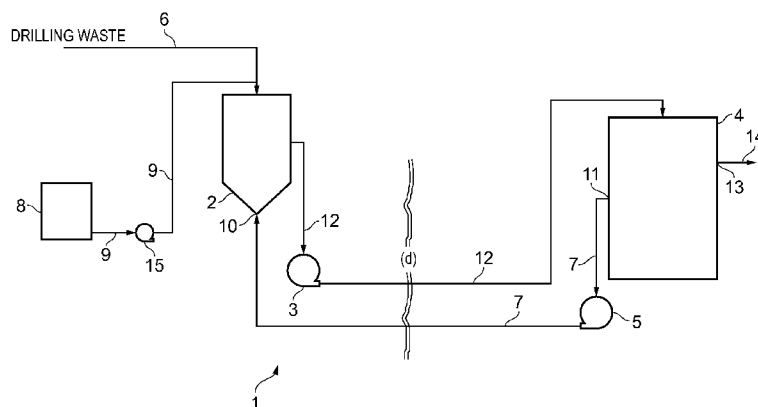


FIG. 1

(57) **Abstract:** The present invention relates to a hydraulic mass transport system (1) for transportation of drilling waste from or within drilling operations offshore and onshore, such as for instance oil and gas well drilling platforms or geothermal drilling, where the system comprises a device (2) for gathering and mixing of drill cuttings and a hydraulic fluid, processed or unprocessed, that may include a return flow of the system. A pump (3) is thereafter used to transfer the mixture of drilling waste and hydraulic that could include a return flow, to a receiving tank (4), in which receiving tank (4) the drilling waste is separated from the hydraulic, whereafter the processed or unprocessed hydraulic is transferred to the device (2) for gathering and mixing the drilling waste and the processed or unprocessed hydraulic. The present invention also relates to a method for use with the system according to the present invention.

HYDRAULIC MASS TRANSPORT SYSTEM AND METHOD FOR TRANSPORTATION OF DRILLING WASTE

5 The present invention relates to drilling operations such as oil and gas well drilling or geothermal drilling and more particularly to the handling and transport of cuttings that are generated during drilling operations offshore and onshore. Even more particularly, the present invention relates to a system and a method for handling of cuttings/rock cuttings/drilled solids that are generated during drilling activity.

10 Such a system and method may, for instance, be used during drilling operations such as oil and/ or gas well drilling operations, geothermal drilling operations, or even after such drilling operations have been completed, for instance in connection with a transport needs arising subsequently after such drilling operations. This transportation needs may be internally on the platform, between the platform and a vessel or also between a platform or vessel and a shore facility.

15 The vessel may be a ship, a drillship, a FSPO, a barge, a supply ship or the like, and the platform may be an oil and/ or gas well platform, a rig or the like. Furthermore, the handling and transportation of the cutting may be done offshore, onshore or subsea.

20 In the drilling of oil and gas wells, a drill bit is used to drill many thousands of meters into the earth's crust. Oil rigs typically employ a drilling rig or derrick that extends above the well drilling platform and which can support joint after joint of drill pipe connected end to end during the drilling operation.

25 As the drill bit is pushed further and further into the earth, additional pipe joints are added to the ever-lengthening string or drill string. The drill pipe or drill string thus comprises a plurality of joints of pipe, each of which has an internal, longitudinally extending bore for carrying fluid drilling mud from the well drilling platform through the drill string and to a drill bit supported at the lower or distant end of the drill string.

30 Drilling mud lubricates the drill bit and carries away well cutting generated by the drill bit as it digs deeper. The cuttings are carried in a return flow stream of drilling mud through the well annulus and back to the well drilling platform at the earth's surface. When the drilling mud reaches the surface, it is contaminated with small pieces of shale and rock, which are known in the industry as well cutting or drill cuttings.

35 Cuttings have in the past been separated from the reusable drilling mud with commercially available separators that are known as shale shakers. Other solids separators include mud cleaners and centrifuges. Some shale shakers are designed to

filter coarse material from the drilling mud while other shale shakers are designed to remove finer particles from the well drilling mud. After separating well cuttings therefrom, the drilling mud is returned to a mud pit where it can be supplemented and/or treated prior to transmission back into the well bore via the drill string and to the drill bit to repeat the process.

The disposal of separated shale and cutting is a complex environmental problem. Drill cuttings contain not only the mud product that would contaminate the surrounding environment, but also can contain oil that is particularly hazardous in the environment, especially when drilling in a marine environment.

Oil and gas drilling operations produce drill cuttings or tailings that consist of material removed from a well with mixtures of other fluids and materials that are used to facilitate drilling. This other material is typically called drilling mud.

US 6.988.567 B2 regards methods for moving drilled cuttings using a cuttings processor with a rotating annular screen to separate fluid from drilled cuttings and/or such methods including conveying with air under positive pressure, drilled cuttings to flow conduit apparatus; applying air under positive pressure to the flow conduit apparatus; applying air under positive pressure to the flow conduit apparatus to continuously move the drilled cuttings material therethrough; continuously moving the drilled cuttings material with the air under pressure to separation apparatus; with the separation apparatus continuously separating drilled cuttings from air; wherein, in certain aspects, the drilled cuttings are included in a low density slurry with drilling fluid, drilling mud and/ or oil and wherein, in certain aspects, the separation apparatus is a cyclone separator and the drilled cuttings moved into the cyclone separator are wet; and systems for effecting such methods.

WO 93/20328 A1 regards a method and an apparatus for processing oily cuttings generated at a well site in order to produce a slurry suitable for injection into a subsurface formation. The oily cuttings are agitated with seawater in, for example, a primary mixing tank, which contains an agitator. The mixture is then pumped, using pumping means, to a roller mill grinding means at which the mixture is ground in such a way that particles of greater size are proportionally degraded more than particles of smaller size. The solid-rich slurry emerging from the grinding means is fed to a slurry tank at which, if necessary, seawater and/or chemicals are added to produce a slurry of desired rheological properties suitable for injection into the formation.

GB 2.330.600 A regards a method of treating solids generated during a drilling process for storage and transportation. Drilling mud is supplied to a platform, by pumping from a supply ship. By-products, such as oily cuttings, are transported by the ship back to a shore-based cuttings processing facility, where the oily cuttings

are cleaned. The cuttings are mixed with a drilling mud based, thixotropic carrier fluid, to form a slurry. The slurry is stored in a retention tank located low down on the platform, and pumped into a tank on a ship which has conveyed drilling mud to the platform, for transporting the slurry to a shore based retention tank into which it is pumped from the ship's tank. On-shore processing involves separating the cuttings from the carrier fluid, and cleaning the cuttings for dumping. Agitation means for agitating the slurry, to prevent solids settlement, are provided in the platform slurry retention tank. Pipe means for conveying slurry to and drilling mud from the storage tank on the supply vessel, and pump means for pumping said slurry to the storage tank, through the said pipe means, are also provided.

The prior art systems for transporting drilling waste over shorter or longer distances are typically bulky, not flexible, not mobile and complicated to install, especially screw conveyors, redlers and cuttings conveyors.

One solution to the above systems may be pneumatic transport systems, but also such pneumatic systems suffer from several drawbacks such as high noise level, high powered compressors, high risk associated with pressurized facilities and large energy storage in very bulky air and storage tanks, which are expensive to purchase or maintain in production in that they are material-consuming and labor intensive, together with such systems are subject to strict certification regimes, especially with regards to explosion hazards, Pressure Equipment Directive (PED) etc.

The object of the present invention is to provide a system and a method for transportation of drilling waste originating from any drilling operation, such as from/ within an oil and/ or gas well drilling platform, or for instance geothermal drilling operations, where the system and method minimize and possibly alleviate one or more of the disadvantages of the prior art, or to provide a useful alternative.

This object is obtained according to the invention by the features disclosed in the following independent claims, with additional features of the invention set forth in the dependent claims and the description below.

According to the present invention it is provided a hydraulic mass transport system for handling and transportation of drilling waste when the drilling waste is to be transported from one place to another, for instance internally on an oil and/ or gas well drilling platform, between an oil and/or gas well drilling platform and a vessel, or also between a vessel and a shore facility, or for instance transport needs connected with geothermal drilling operations. The system comprises a pump for transferring a mixture of drilling waste and hydraulic to a receiving tank and a recirculating pump for transporting a hydraulic from the receiving tank to the device for gathering and mixing of drilling waste and hydraulic, that may include a return flow of the system.

In one embodiment of the present invention the hydraulic mass transport system may also comprise a device for gathering and mixing of said drilling waste and said hydraulic, where the device for gathering and mixing may be arranged as an independent unit in the system or also integrated with the pump for transferring the mixture of drilling waste and hydraulic.

The hydraulic from the system may be processed before the hydraulic is mixed with the drilling waste, where such a processing of the hydraulic may comprise removing of larger or smaller particles from the hydraulic that have not been separated in the receiving tank. A skilled person will know that the hydraulic may then be run to a separator or the like. The processing of the hydraulic may then be done before the hydraulic is returned to the pump, prior to the mixing with the drilling waste.

Two adjacent components of the hydraulic mass transport system according to the present invention are in fluid communication with each other through a pipe or conduit, thereby providing a closed or partly closed hydraulic mass transport system.

In a closed or partly closed hydraulic mass transport system, a pipe or conduit that is used to transport a hydraulic or processed or unprocessed hydraulic from the receiving tank, through a recirculating pump, may be arranged to extend into a pipe that provides fluid communication between the pump for transferring the mixture of drilling waste and hydraulic that may include a return flow from a receiving tank, thereby providing an ejector or venturi effect in the pipe or conduit.

The receiving tank may be a separator in order to separate the drilling waste from the hydraulic, where such a separator, for instance, may be a gravity separator a centrifugal separator or the like.

Furthermore, the receiving tank may also comprise an output device arranged within the tank, such that the separated drilling waste can be transported out from the receiving tank. A conveyor may then be connected to the receiving tank and the output device in order to transport the separated drill cutting away for further or additional treatment.

In one aspect of the present invention the receiving tank is provided with one or more outlets for processed hydraulic, in a bottom area of the receiving tank, or an area in the tank where the bulk density is favorable, such that the processed hydraulic through a pipe or conduit, by means of the recirculating pump, or by gravity flow, can be returned to the device for gathering and mixing of drilling waste and the processed hydraulic.

However, a person skilled in the art would understand that said one or more outlets for processed hydraulic also might be arranged in other areas of the receiving tank.

5 In one aspect of the present invention the hydraulic mass transport system may comprise an additional reservoir of hydraulic, where hydraulic from this reservoir may be supplied, when necessary or needed, to the device for gathering and mixing the drilling waste and the processed hydraulic from the return flow of the receiving tank.

10 It could also be envisaged that the hydraulic mass transport system for transportation of drilling waste from an oil and/or gas well drilling platform can comprise more than one receiving tank, whereby the separation of the drilling waste from the hydraulic can be done in several steps, each step separating the drill cuttings or drilling waste into smaller particles.

15 The hydraulic mass transport system for transportation of drilling waste from drilling operations may also comprise one or more devices in the form of filters, separators, centrifuges or similar, in order to process the hydraulic that is circulated in the system before the hydraulic is transferred back to the device for gathering and
20 mixing of the drilling waste and the processed hydraulic that may include a return flow. Alternatively, the hydraulic may be processed at predetermined periods and otherwise circulated in the system without processing.

25 The present invention also relates to a method for handling and transportation of drilling waste when drilling waste is to be transported from one place to another, for instance internally on an oil and/ or gas well drilling platform, rig or installation, vessel such as a ship, drillship, FSPO, barge, supply ship, rig or installation offshore/onshore/subsea, between an oil and/or well drilling platform and a vessel, or also between a vessel and a shore facility, or in connection with geothermal
30 drilling operations, where the method comprises the following steps: feeding the drill cuttings together with a hydraulic that may include a return flow in the system to a device for gathering and mixing of the drilling waste and hydraulic that may include a return flow of the system, feeding the mixture of drilling waste and hydraulic to a receiving tank and separating the drilling waste from the hydraulic.
35 The separated drilling waste is thereafter transferred to one or more storage devices, while the hydraulic is returned to the device for gathering and mixing the drilling waste and hydraulic.

40 According to one aspect of the present invention, the hydraulic in the receiving tank, after the separation of the drilling cuttings, may be processed continuously, or every time the hydraulic is returned to the device for gathering and mixing the drilling waste and the hydraulic. Alternatively, the hydraulic may be processed at

predetermined time intervals in order to separate particles over a certain size from the hydraulic.

5 A hydraulic from an additional reservoir may also be transported and added to the device for gathering and mixing of drilling waste and hydraulic that may include a return flow, together with the drilling waste and the hydraulic.

10 Further objects, structural embodiments and advantages of the present invention will be seen clearly from the following detailed description, the attached drawings and the claims below.

The invention will now be described with reference to the attached figures, wherein:

15 Figure 1 shows a first embodiment of a hydraulic mass transport system for transportation of drilling waste from an oil and/ or gas well drilling platform according to the present invention,

20 Figure 2 shows a second embodiment of the hydraulic mass transport system according to the present invention,

Figure 3 shows another embodiment of the hydraulic mass transport system according to the present invention,

25 Figure 4 shows yet another embodiment of the hydraulic mass transport system according to the present invention, and

Figure 5 shows an alternative embodiment of the hydraulic mass transport system according to figure 4.

30 The present invention relates to a system and a method for handling and transportation of drilling waste that are generated during drilling operations such as oil and/or gas well drilling activity or geothermal drilling operations, where the drilling waste may be cuttings, rock cuttings or the like, and where the drilling waste is to be transported either internally on the platform, between the platform
35 and a vessel or even between a vessel and an onshore facility.

40 Figure 1 shows in a schematic way a first embodiment of the hydraulic mass transport system 1 for transportation of drilling waste, where the drilling waste may be in the form of drill cuttings, according to the present invention, the hydraulic mass transport system 1 being arranged on a platform (not shown) and being used to handle and transport drilling waste. In one embodiment of the present invention, the

hydraulic mass transport system 1 comprises a device 2 for gathering and mixing of drilling waste and a hydraulic from a return flow from a receiving tank 4.

5 The drilling waste is supplied to the device 2 for gathering and mixing of the drilling waste and the hydraulic through a pipe or conduit 6, but it should also be understood that the drilling waste could be supplied to the device 2 for gathering and mixing of the drilling waste through a conveyor or the like, where the conveyor (not shown) may be a screw conveyor, a belt conveyor or the like.

10 The hydraulic that may be circulated via a return flow is transferred from the receiving tank 4 to the device 2 for gathering and mixing of the drilling waste and hydraulic through a pipe or conduit 7, by means of a recirculation pump 5 or by gravity flow. The pipe or conduit 7 can then be connected with an inlet 10 provided in a lower part of the device 2 for gathering and mixing of the drilling waste.

15 The pipe or conduit 7 is in fluid communication with the receiving tank 4 through an outlet 11 provided in the receiving tank 4 for the hydraulic, where the outlet 11 for hydraulic is provided in an area of the receiving tank 4 where the density of the hydraulic bulk is lower due to a process of mass separation.

20 The device 2 for gathering and mixing of the drilling waste and the hydraulic is in fluid communication with a pump 3 for transferring the mixture of drilling waste and hydraulic through a pipe or conduit 12, where the pump 3 for transferring the mixture of drilling waste and hydraulic is used to transfer the mixture of drilling waste and hydraulic from the device 2 for gathering and mixing of the drilling waste and hydraulic to the receiving tank 4.

30 In the receiving tank 4 the drilling waste is separated from the hydraulic, whereafter the separated drilling waste can be removed from the receiving tank 4 through an outlet 13 in the receiving tank 4. An output device 14 is then connected to the outlet 13 in the receiving tank 4, where the output device 14 may be used to transfer the separated drilling waste to one or more storage devices (not shown) or to an area where the drilling waste is further processed if needed.

35 The output device 14 that is used to transport the separated drilling waste away from the receiving tank 4 may be in the form of a pipe or conduit or a conveyor, while said one or more storage devices may be in the form of container(s) or receptacle(s).

40 According to the present invention, the drilling waste will be supplied, together with the hydraulic from the return flow from the receiving tank 4, to the device 2 for gathering and mixing of the drilling waste and the hydraulic from the return

flow in order to be mixed in the device 2. The pump 3 for transferring the mixture of drilling waste and hydraulic will thereafter be used to transport the mixture of drilling waste and hydraulic from the device 2 for gathering and mixing of the drilling waste and hydraulic to the receiving tank 4, in which receiving tank 4 the drilling waste in appropriate ways is separated from the hydraulic. The separated drilling waste is thereafter removed from the receiving tank 4 for storage and/or additional processing, while the hydraulic is returned to the device 2 for gathering and mixing of drilling waste and hydraulic through the recirculating pump 5.

A reservoir 8 for hydraulic is in fluid communication with the pipe or conduit 6, where a supply pump 15 is used to transfer the hydraulic from the reservoir 8 for hydraulic to the pipe or conduit 6 when the hydraulic mass transport system 1 for transportation of drilling waste needs to be replenished with hydraulic. A level control system (not shown) may also be connected to the device 2 for gathering and mixing of drilling waste and hydraulic, whereby such a system will open for a flow of the mixture of drilling waste and hydraulic from the device 2 for gathering and mixing of drilling waste and hydraulic and to the reservoir 8 for hydraulic when the mixture exceeds a predetermined maximum level in the device 2 for gathering and mixing of drilling waste and hydraulic.

Figure 2 shows an embodiment of the hydraulic mass transport system 1 for transportation of drilling waste according to figure 1, where the system 1 in this embodiment in addition comprises a return pipe or conduit 16 in fluid communication with the pipe or conduit 12 and the device 2 for gathering and mixing of drilling waste and hydraulic, such that a part of the flow of the pressurized mixed drilling waste and hydraulic can be returned to the device 2 for gathering and mixing of drilling waste and hydraulic in order to suspend the drilling waste and the hydraulic in the device 2 for gathering and mixing of the drilling waste and hydraulic.

The rest of the system 1 in this embodiment is as described in accordance with figure 1.

Figure 3 shows an alternative embodiment of a hydraulic mass transport system 1 for transportation of drilling waste according to the present invention, where the drilling waste is supplied to a gathering, mixing and pumping unit 22. The drilling waste and the hydraulic from a return flow from a receiving tank 4 and/or an additional reservoir 8 are then gathered and mixed in the gathering, mixing and pumping unit 22, whereafter a mixture of drilling waste and hydraulic is pumped to the receiving tank 4 through a pipe or conduit 12.

In the receiving tank 4 the drilling waste is separated from the hydraulic, whereafter the hydraulic is transferred from the receiving tank 4 to the gathering, mixing and pumping unit 22 through a pipe or conduit 7, by means of a recirculation pump 5. The pipe or conduit 7 is then, at one end, connected to an inlet 10 provided in a lower part of the gathering, mixing and pumping unit 22 and, at an opposite end, connected to an outlet 11 provided in a lower part of the receiving tank 4.

The separated drilling waste is removed from the receiving tank 4 through an outlet 13 provided in the receiving tank 4, to which outlet 13 a pipe or conduit 14 is connected. The pipe or conduit 14 will then transfer the separated drilling waste to one or more storage devices (not shown) or to an area for further processing of the drilling waste.

It should be understood that, instead of using the pipe or conduit 14, a conveyor can be used to transport the separated drilling waste away from the receiving tank 4, where the conveyor may be a screw conveyor a belt conveyor or the like, while said one or more storage devices may be in the form of container(s) or receptacle(s).

A reservoir 8 for hydraulic is connected to the gathering, mixing and pumping unit 22, where a supply pump 15 is used to transfer the hydraulic from the reservoir 8 for hydraulic to gathering, mixing and pumping unit 22 when the hydraulic mass transport system 1 for transportation of drilling waste needs to be replenished with hydraulic.

A level control system (not shown) may also be connected to the device 22 for gathering and mixing of drilling waste and hydraulic, whereby such a system will open for a flow of the mixture of drilling waste and hydraulic from the device 2 for gathering and mixing of drilling waste and hydraulic and to the reservoir 8 for hydraulic when the mixture exceeds a predetermined maximum level in the device 2 for gathering and mixing of drilling waste and hydraulic.

Figure 4 shows an alternative embodiment of the hydraulic mass transport system 1 according to figure 1, where the system 1 comprises a device 2 for gathering and mixing of drilling waste and a hydraulic from a return flow from a receiving tank 4.

The drilling waste is supplied to the device 2 for gathering and mixing of the drilling waste and the hydraulic through a pipe or conduit 6. Instead of using the pipe or conduit 6, a conveyor or the like could be used to supply the drilling waste to the device 2 for gathering and mixing of the drilling waste and the hydraulic.

A recirculation pump 5 is used to transfer the hydraulic from a return flow from a receiving tank 4 to the device for gathering and mixing of the drilling waste and the

hydraulic, whereby the recirculation pump 5 is connected to a pipe or conduit 7. One end of the pipe or conduit 7 is then connected with an inlet 10 provided in a lower part of the device 2 for gathering and mixing of the drilling waste and the hydraulic, while an opposite end of the pipe or conduit 7 is connected to an outlet 11 provided in a lower half of the receiving tank 4.

Furthermore, the device 2 for gathering and mixing of drilling waste and hydraulic is in fluid communication with the receiving tank 4 through a pipe or conduit 12. As the receiving tank 4 is arranged lower than the device 2 for gathering and mixing of drilling waste and hydraulic, the mixture of drilling waste and hydraulic will be transferred from the device 2 to the receiving tank 4 through gravity flow.

When the mixture of drilling waste and hydraulic are transferred to the receiving tank 4, the drilling waste will be separated from the hydraulic in the receiving tank 4 through separation, settling or the like, whereafter the separated drilling waste can be removed from the receiving tank through an outlet 13 in the receiving tank 4. A pipe or conduit 14 is then connected to the outlet in the receiving tank 4, where the pipe or conduit 14 is used to transfer the separated drilling waste to one or more storage devices (not shown) or to an area where the drilling waste can be further processed if needed.

The hydraulic mass transport system 1 also comprises a reservoir 8 for hydraulic, where the reservoir 8 for hydraulic 8 is in fluid communication with the device 2 for gathering and mixing of drilling waste and hydraulic through a pipe or conduit 9. A supply pump 15 connected to the pipe or conduit 9 is used to transfer the hydraulic from the reservoir 8 for hydraulic to the device 2 for gathering and mixing of drilling waste and hydraulic when the hydraulic mass transport system 1 for transportation of drilling waste needs to be replenished with hydraulic.

Figure 5 shows yet an alternative embodiment of the hydraulic mass transport system 1 according to figure 1, where the system 1 comprises a device 2 for gathering and mixing of drilling waste and a hydraulic from a return flow from a receiving tank 4.

The device 2 for gathering and mixing of the drilling waste and the hydraulic is in fluid communication with a pump 3 for transferring the mixture of drilling waste and hydraulic through a pipe or conduit 12, where the pump 3 for transferring the mixture of drilling waste and hydraulic is used to transfer the mixture of drilling waste and hydraulic from the device 2 for gathering and mixing of the drilling waste and hydraulic to the receiving tank 4.

Drilling waste is separated from the hydraulic in the receiving tank 4, whereafter the separated drilling waste can be removed from the receiving tank 4 through an outlet 13 provided in the receiving tank 4. A pipe or conduit 14 is connected to the outlet 13 in the receiving tank 4, where the pipe or conduit 14 may be used to transfer the separated drilling waste to one or more storage devices (not shown) or to an area where the drilling waste is further processed if needed.

The output device 14 that is used to transport the separated drilling waste away from the receiving tank 4 may be in the form of a pipe or conduit or a conveyor, while said one or more storage devices may be in the form of container(s) or receptacle(s).

Furthermore, the receiving tank 4 is in fluid communication with the device 2 for gathering and mixing of drilling waste and hydraulic through a pipe or conduit 7. As the receiving tank 4 is arranged at a higher level than the device 2 for gathering and mixing of drilling waste and hydraulic, the hydraulic from the return flow will be transferred from the receiving tank 4 to the device 2 for gathering and mixing of drilling waste and hydraulic through gravity flow.

A reservoir 8 for hydraulic is connected to the device 2 for gathering and mixing of drilling waste and hydraulic, where this is done through a pipe or conduit 9. Whenever needed, a supply pump 15 is used to transfer hydraulic from the reservoir 8 for hydraulic to the device for gathering and mixing of drilling waste and hydraulic.

The present invention has now been explained with reference to exemplary embodiments, but a person of skill in the art will understand that changes and modifications could be made to these embodiments which are within the scope of the invention as defined in the following claims.

CLAIMS

1. A hydraulic mass transport system (1) for transportation of drilling waste generated from drilling operations offshore and onshore, such as for instance oil and gas well drilling platforms or geothermal drilling, characterized in that the system (1) comprises a device (2) for gathering and mixing of drilling waste and a hydraulic processed or unprocessed, that may include a return flow of the system, a pump (3) for transferring the mixture of drilling waste and hydraulic that could include a return flow, to a receiving tank (4) in which receiving tank (4) the drilling waste is separated from the hydraulic, and a recirculating pump (5) for transferring hydraulic to the device (2) for gathering and mixing of drilling waste and processed or unprocessed hydraulic that may include a return flow from the receiving tank (4).
2. System according to claim 1, characterized in that the system (1) is a closed or partly closed system.
3. System according to claim 1 or 2, characterized in that the system (1) comprises one or more additional receiving tanks (4).
4. System according to claim 1, characterized in that the system (1) further comprises at least one ejector arranged between the pump (3) and the receiving tank (4).
5. System according to claim 1, characterized in that the recirculating pump (5) is in fluid communication with the receiving tank (4) through an inlet (10) for processed hydraulic arranged in a bottom area of the receiving tank (4).
6. System according to claim 1 or 5, characterized in that an output device is in fluid communication with the receiving tank (4) through an outlet (12) for separated particles provided in the receiving tank (4).
7. System according to any one of claim 1, 2, 3, 4 or 5, characterized in that the receiving tank (4) is a separator in the form of a gravity separator, a centrifugal separator, shaker, filter or the like.
8. System according to any one of the proceeding claim 1-6, characterized in that the system (1) comprises at least one additional reservoir (8) of hydraulic.
9. A method for transportation of drilling waste from drilling operations, the method comprising the following step: feeding the drilling waste together with a processed or unprocessed hydraulic from a return flow from a receiving tank (4) to a device (2) for gathering and mixing of the drilling

- 5 waste and processed or unprocessed hydraulic from the return flow, feeding the mixture of drilling waste and liquid to the receiving tank (4), separating the drill waste from the hydraulic, transferring the separated drilling waste to a storage device and transporting the hydraulic from the return flow from the receiving tank (4) to the device (2) for gathering and mixing the drilling waste and processed or unprocessed hydraulic.
- 10 10. Method according to claim 9, characterized in that hydraulic from an additional reservoir (8) is transported and added to the device (2) for gathering and mixing of drilling waste and processed or unprocessed hydraulic that may include a return flow from the receiving tank (4).
11. Method according to claim 9 or 10, characterized in that the hydraulic in the receiving tank (4) is processed before it is transported to the device (2) for gathering and mixing of drilling waste and processed hydraulic from the return flow from the receiving tank (4).
- 15 12. Method according to claim 1, characterized in that the separation of the drilling waste from the hydraulic is performed in one or several steps.

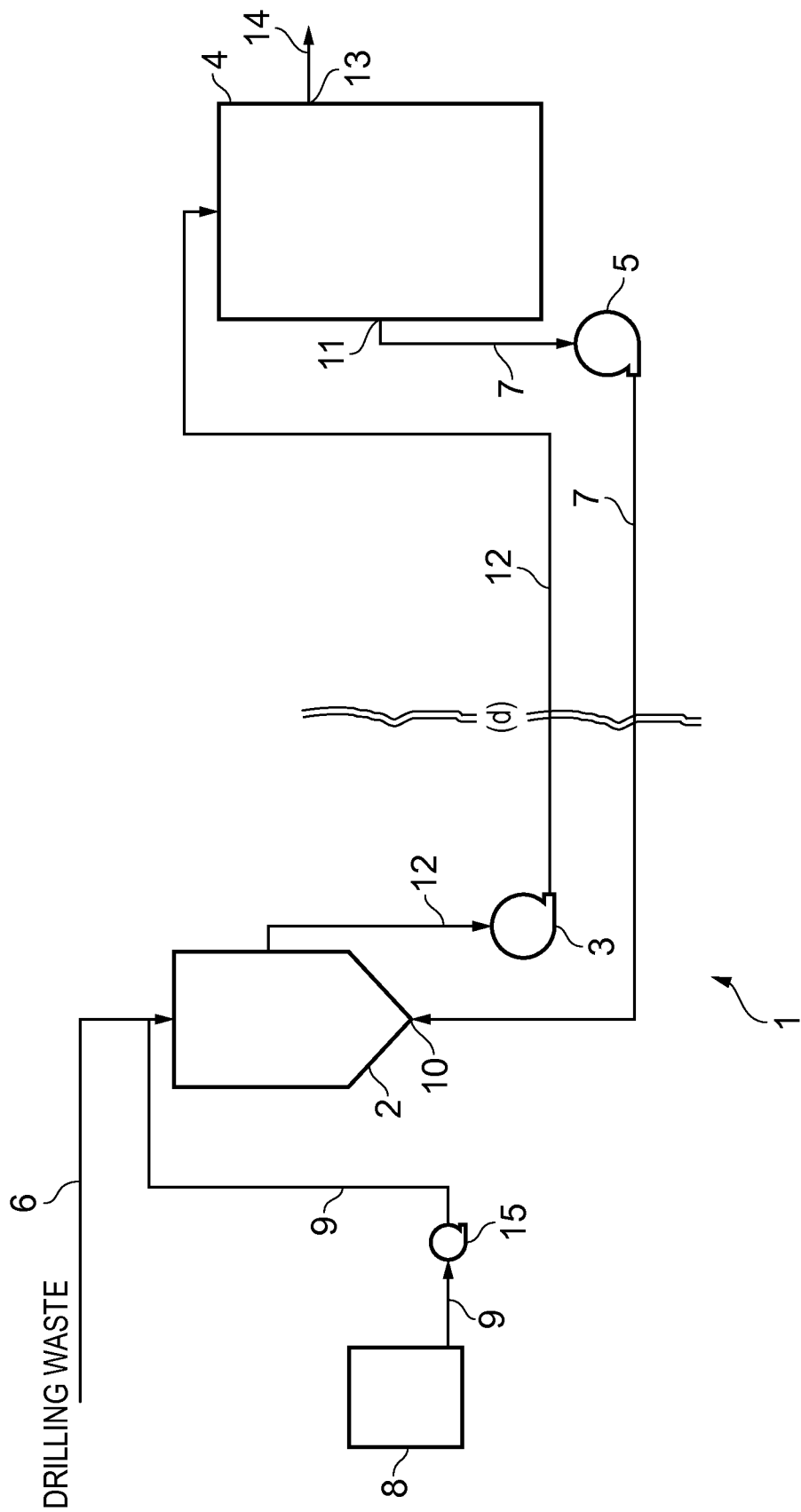


FIG. 1

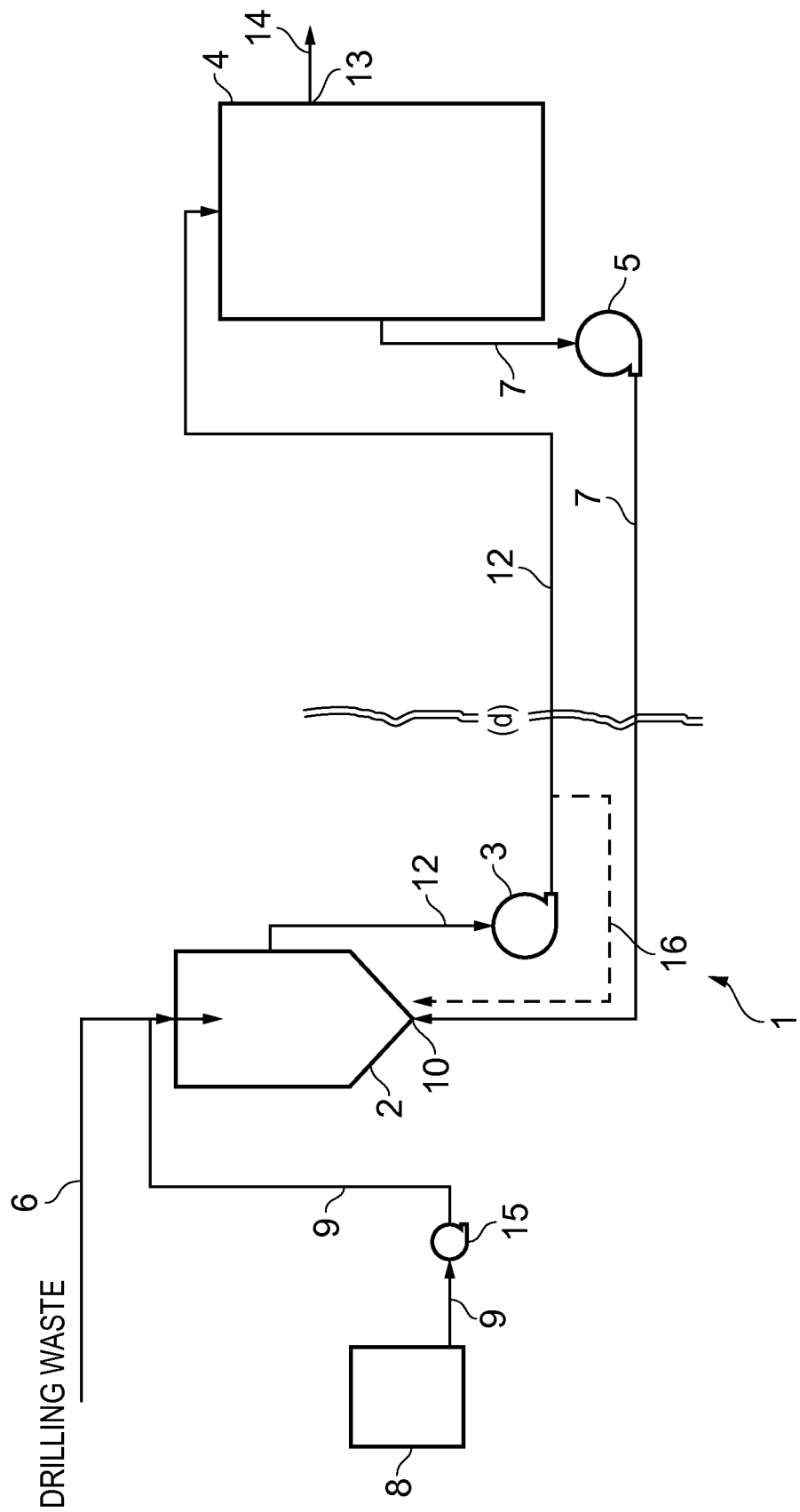


FIG. 2

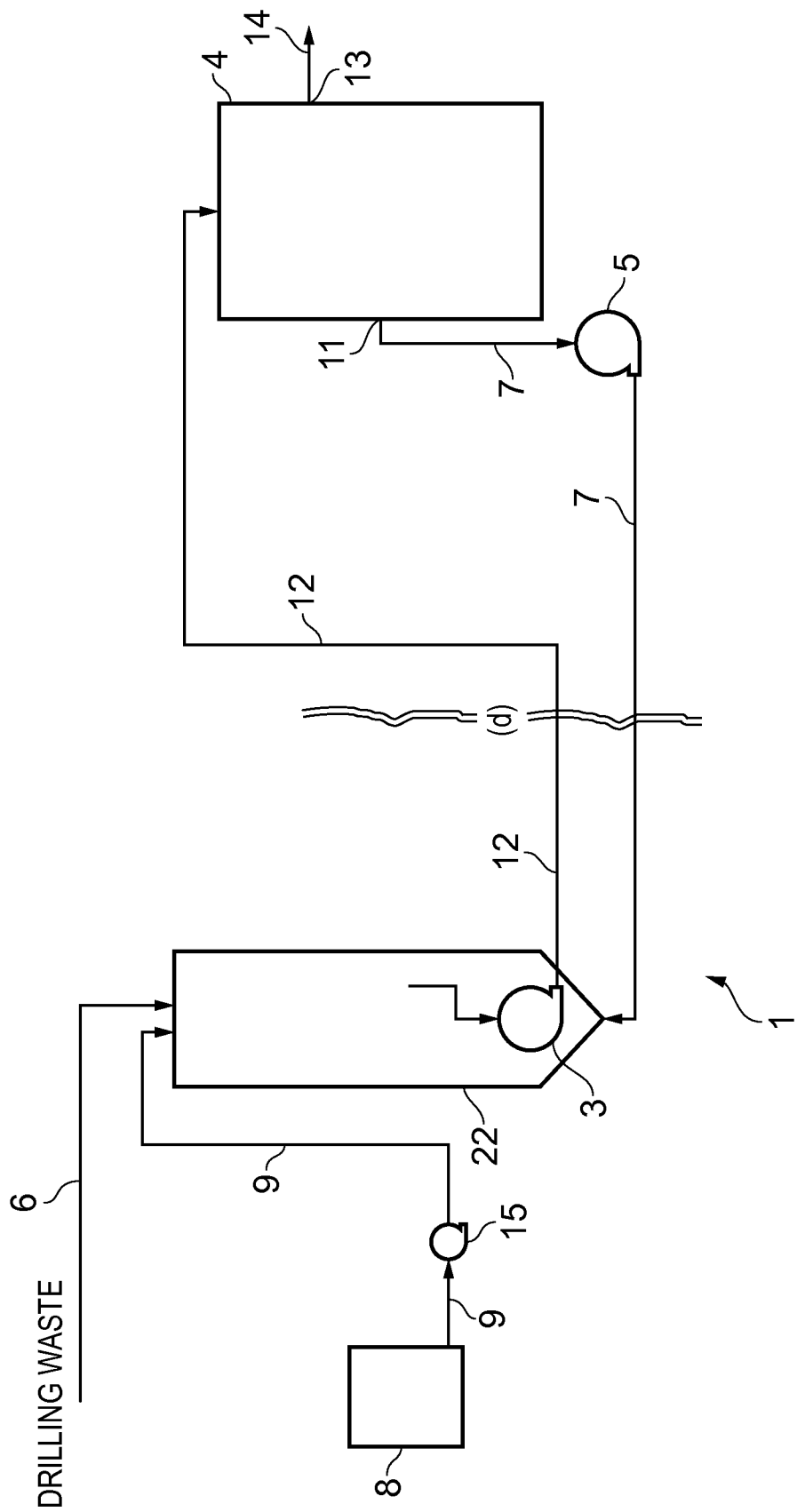


FIG. 3

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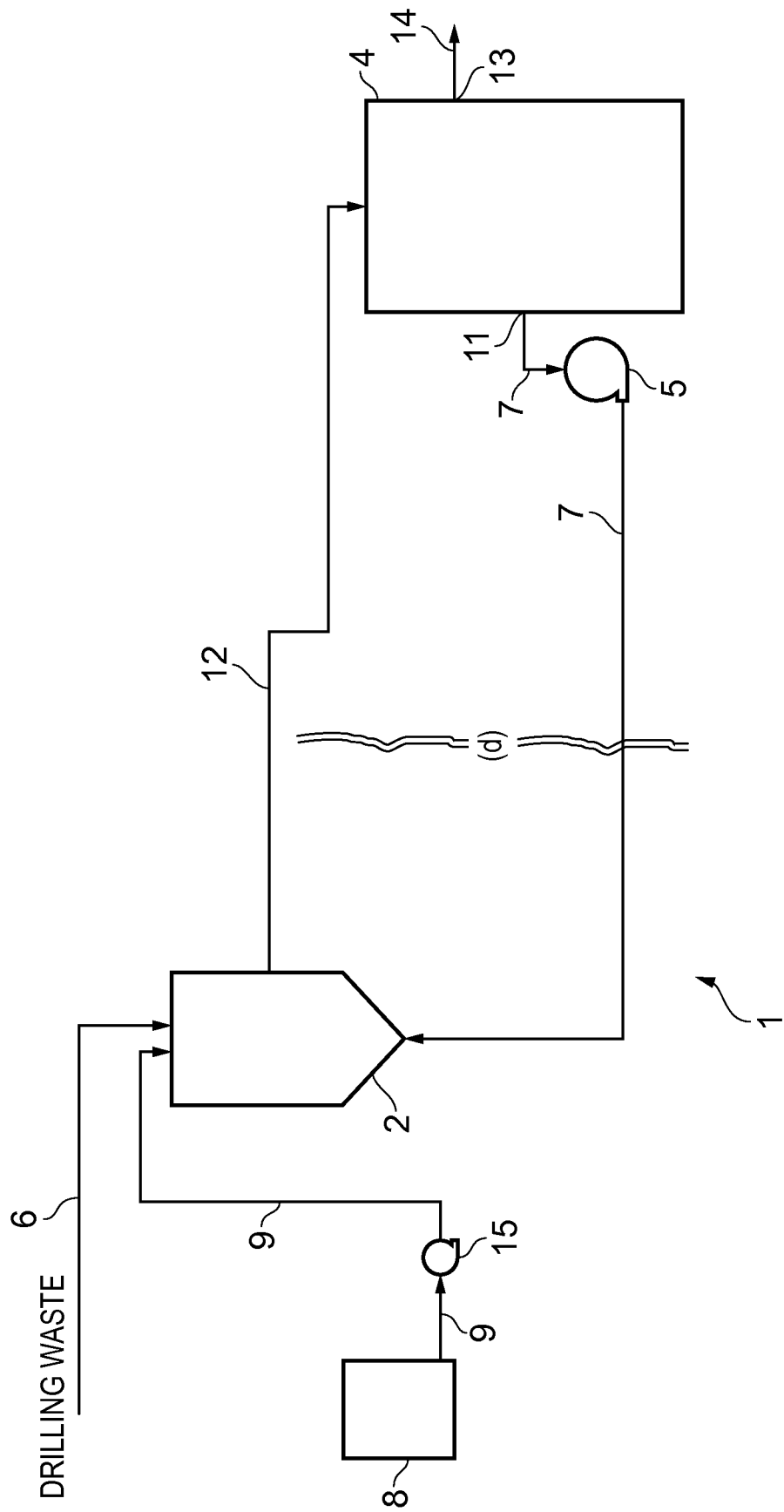


FIG. 4

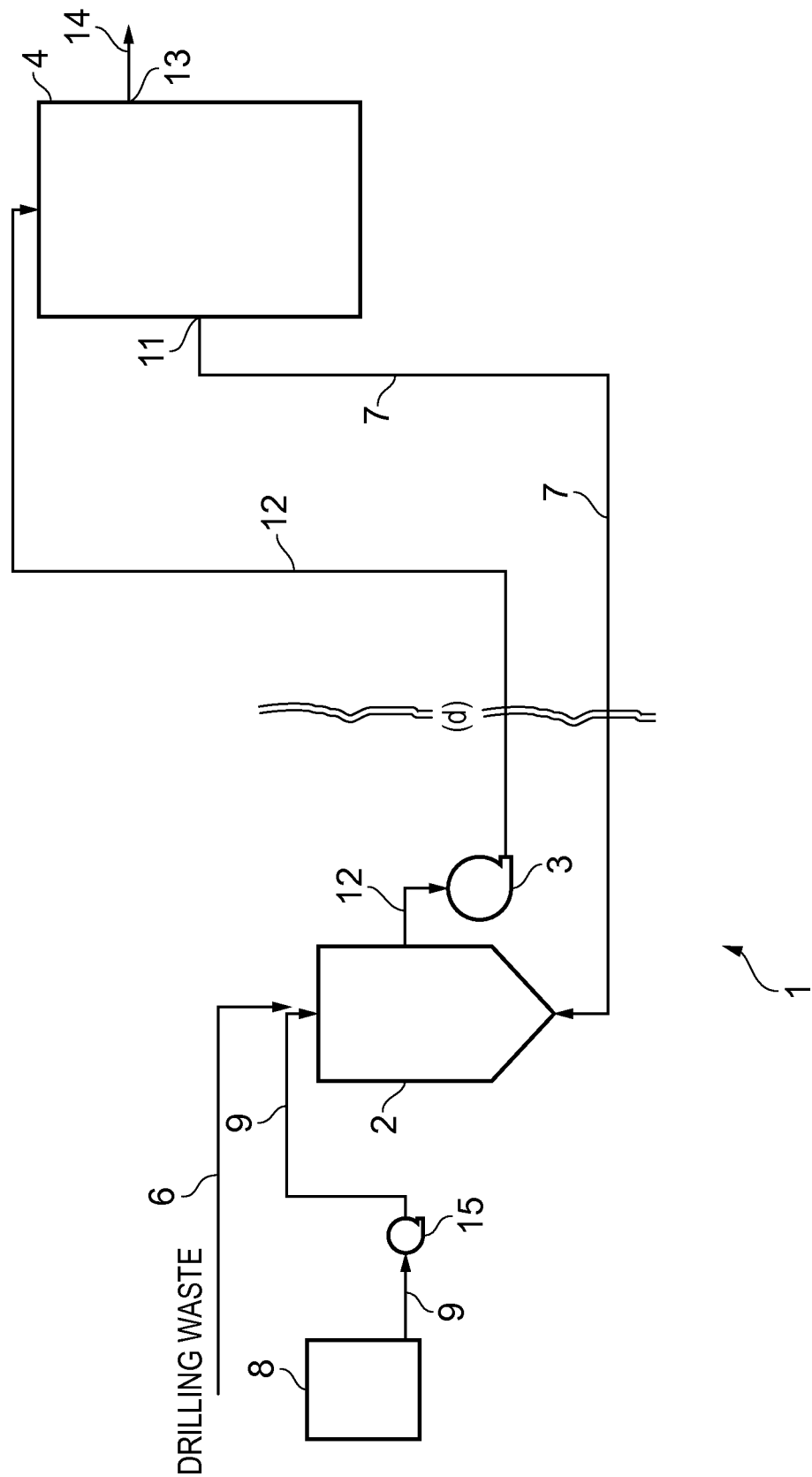


FIG. 5

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2017/058486

A. CLASSIFICATION OF SUBJECT MATTER

INV. E21B41/00 E21B21/06
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
E21B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010/116753 A1 (PRUETT JOHN O [US] ET AL) 13 May 2010 (2010-05-13) paragraphs [0020] - [0022], [0024] - [0031]; figures 1, 2 -----	1-4,6-12
X	US 2001/039887 A1 (REDDOCH JEFFREY [US]) 15 November 2001 (2001-11-15) paragraphs [0036], [0042]; figures 1, 5 -----	1,2,5-9, 11,12
X	US 2 870 990 A (BERGEY TAYLOR G) 27 January 1959 (1959-01-27) column 2, line 40 - column 3, line 5; figure 1 -----	1-12
X	US 6 045 070 A (DAVENPORT RICKY W [US]) 4 April 2000 (2000-04-04) column 3, line 62 - column 4, line 44; figure 1 -----	1-9



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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Date of the actual completion of the international search

6 June 2017

Date of mailing of the international search report

19/06/2017

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2017/058486

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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		US 2013299405 A1	14-11-2013
US 2001039887 A1	15-11-2001	US 2001039887 A1	15-11-2001
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