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Search 3: SFT=(lubricant* and bearing and pump* and horizontal) and IC=(f04d) (Results 538)

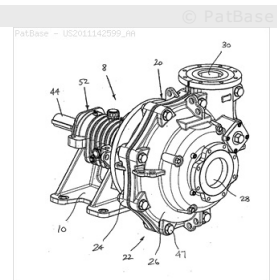
1) Family number: 44126664 (US2011142599A)

ADJUSTABLE SIDE LINER FOR A PUMP

Abstract: Source: US2011142599A An adjustment assembly for **pump** casing of a **pump**, the **pump** casing including a main part and a side part having a main axis and a side wall section extending laterally with respect to the main axis. The adjustment assembly is operable to cause relative displacement between the side part and the main part of the **pump** casing. The adjustment assembly includes a drive device and an actuator which can be activated externally of the **pump**, the drive device being operable to cause the relative displacement of the side part in response to activation of said actuator, the relative displacement capable of being a combination of axial and rotational movement.

Probable Assignee: WEIR MINERALS AUSTRALIA LTD

Earliest Publication Date: 20091217



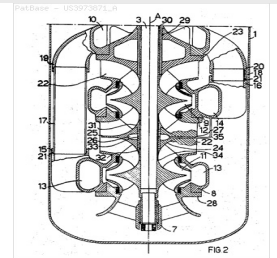
2) Family number: 30464227 (US3973871A)

SUMP PUMP

Abstract: Source: US3973871A A sump **pump** comprising a sump having an inlet for the liquid to be **pumped** and a discharge outlet, the **pump** proper being received at the bottom of the sump and being driven by a vertically mounted shaft. The **pump** comprises two impellers each having two intakes, the impellers being mounted one above the other on the shaft and surrounded by two volutes each having one or two outlets which are connected to the inlets of a collecting manifold, the outlet of such manifold being connected to the outlet of the sump.

Probable Assignee: ACEC

Earliest Publication Date: 19740426



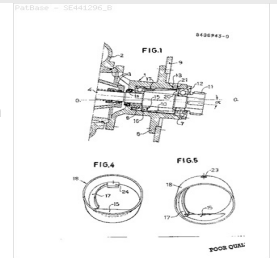
3) Family number: 36055157 (SE441296B)

LUBRICATING APPARATUS AT ANGLED CENTRIFUGAL PUMPS

Abstract: Source: SE441296B In an apparatus at centrifugal **pumps**, which **pump**-wheel axle (4) is mechanically coupled to a rotating axle in an internal combustion engine and driven with this and which **pump** medium is for cooling the motor, the **pump**-wheel axle is stored in at least one **bearing** (6) in a **bearing** housing (1), that has an upward facing opening (13) for application of lubricating oil from the motor to the mentioned **bearing**. To ensure satisfactory lubrication of the **bearing** even in those cases when the **pump**-wheel axle (4) slants downward in the direction of the motor in respect to the **horizontal** plane, there exists a partial partition (15), that is especially closely adfixed to the bottom part of the **bearing** housing's (1) inner wall beside the **bearing** (6) and together with this confines a pocket (16) or the like for accumulation of **lubricant** from the induction opening (13). When this is not positioned essentially precisely above the pocket there is also a pipe (17), that stretches inside the **bearing** housing from the opening (13) to the pocket (16) or to a point essentially precisely above it for induction of **lubricant** to the pocket and that beside this existing **bearing** (6).

Probable Assignee: SCANPUMP AB

Earliest Publication Date: 19850822



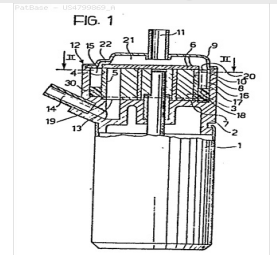
4) Family number: 2831797 (US4799869A)

PNEUMATIC VANE PUMPS WITH OIL SEPARATION

Abstract: Source: US4799869A An intermittently operating pneumatic vane **pump** has a cylindrical seat for its rotor constituted by a ring of porous sintered material housed in a container. The lubricating oil is collected in an interspace between the ring and the container when the **pump** is operating and returns to the **pump** when the **pump** is stopped, to keep the ring of the seat impregnated.

Probable Assignee: CORINT SRL

Earliest Publication Date: 19870916



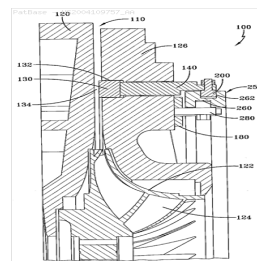
5) Family number: 30651774 (US2004109757A)

VARIABLE GEOMETRY DIFFUSER MECHANISM

Abstract: Source: US2004109757A A system for preventing stall in a centrifugal compressor. The compressor includes an impeller rotatably mounted in a housing and a nozzle base plate fixed to the housing adjacent the impeller. The nozzle base plate cooperates with the housing to define a diffuser gap. The base plate includes a plurality of mechanism support blocks positioned on the backside of the nozzle base plate. A drive ring, mounted to the support blocks, is rotationally moveable with respect to the support blocks and the nozzle base plate between a first position and a second position. Connected to the drive ring is a diffuser ring that moves in response to movement of the drive ring. Diffuser ring moves between a retracted position that is not within the diffuser gap and an extended position extending into the diffuser gap to constrict the gap opening and reduce the flow of fluid through the diffuser gap. The diffuser ring can be positioned at any location between the retracted and extended position to control the amount of fluid flowing through the diffuser gap.

Probable Assignee: YORK INT CORP

Earliest Publication Date: 20040610



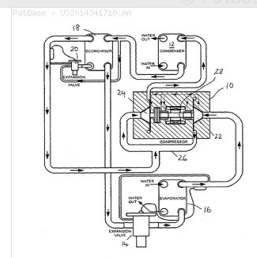
6) Family number: 50735024 (US2014341710A)

CENTRIFUGAL REFRIGERANT VAPOUR COMPRESSORS

Abstract: Source: US2014341710A A refrigerant compressor (10) for use in a chiller-heater system that can provide chilled water at less than 10 degrees centigrade and hot water at more than 80 degrees centigrade without the need for additional heat input, the compressor (10) being configured to provide a compression ratio of at least 18:1 and a temperature lift across the compressor of at least 80K, and the refrigerant fluid being selected to give the desired temperature lift without the pressure at the compressor outlet exceeding 25 bar.

Probable Assignee: VENUS SYSTEMS LTD

Earliest Publication Date: 20130627



7) Family number: 1013029 (US3676018A)

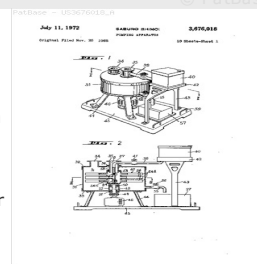
PUMPING APPARATUS

Abstract: Source: US3676018A ABSTRACT OF THE DISCLOSURE

A **pumping** apparatus includes a radially extending rotary fluid passage member within a **pumping** casing. The rotary fluid passage member is communicated with low pressure side within the casing through its inlet end and with high pressure side within the casing through its outlet end. Liquid is intermittently supplied into the fluid passage member through the inlet end to form liquid partitions within the fluid passage member. The liquid partitions are driven radially outwardly through the fluid passage member under the centrifugal force produced by the rotation of the fluid passage member so as to positively transfer the fluid in the low pressure side through the passage member into the high pressure side, thus effecting **pumping** action. This application is a divisional of my co-pending application Ser. No. 778,539, filed Nov. 25, 1968, now Pat. No. 3,584,978. B

Probable Assignee: SHIMADZU CORP

Earliest Publication Date: 19710615



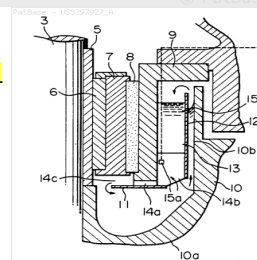
8) Family number: 10354675 (US5297927A)

VERTICAL SHAFT TYPE PUMP

Abstract: Source: US5297927A A vertical shaft type **pump** including a **bearing** device in which water in the **pump** is utilized as lubricating water without supplying water to the **bearing** from the outside of the **pump**, thereby repeatedly conducting no-load operation in the air (in such a state that water is not **pumped**) stably for a long period of time. In the **pump**, a water storage tank upwardly opened is fixed to a rotary shaft, and the lubricating water (the water in the **pump**) is retained within the water storage tank so that the **bearing** is operated while being always soaked in the lubricating water. Also, foreign substances in the water storage tank are mixed with the water without deposition, and the water containing the foreign substances is replaced by the newly **pumped** water.

Probable Assignee: HITACHI LTD

Earliest Publication Date: 19930805



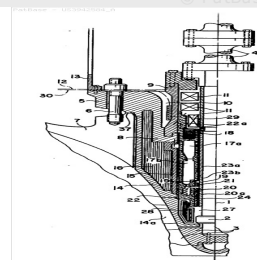
9) Family number: 1039342 (US3942584A)

HOT WATER PUMP WITH COOLED SEALING HOUSING

Abstract: Source: US3942584A This invention relates to an improvement in a hot water **pump** having a cooled sealing housing in a **pump** cover in the upper **pump** portion. The improvement comprises means mounting the sealing housing in a recess of the **pump** cover in a manner such that an annular air space is present between the outer surface of said sealing housing and the inner surface of the recess of the **pump** cover, said air space being in communication with the exterior space surrounding the **pump**.

Probable Assignee: ANDRITZ AG MASCHF

Earliest Publication Date: 19730111

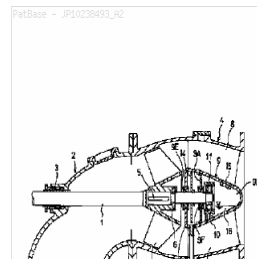


10) Family number: 11088894 (JP10238493A)

SUBMERGED BEARING FOR HORIZONTAL PUMP

PatBase PDF Export - Page: 2 07/11/2018

Abstract: Source: JP10238493A PROBLEM TO BE SOLVED: To dispense with a **lubricant** supplying device or a mechanism for absorbing an impact and preventing biting of foreign matters by forming an underwater **bearing** of a ball **bearing** made of ceramics, sealing and enclosing it inside a **lubricant** chamber partitioned inside an submerged **bearing** chamber, and soaking an outer race and a plurality of balls in **lubricant**. SOLUTION: An submerged **bearing** chamber 9 is partitioned in an axial direction by a partition wall 9A. A slide portion between the inlet of a first chamber 9C and a main shaft 1 and a slide portion between a radial inner end of the partition wall 9A and the main shaft 1 are liquid-tightly and rotatably sealed by a first and a second sealing 9E, 9F, respectively. Meanwhile, a submerged **bearing** stand 10 is supported inside a second chamber 9D, and the tip of the main shaft 1 is rotatably supported by an submerged **bearing** 11 consisting of a radial ball **bearing** made of ceramics supported by the submerged **bearing** stand 10. The second chamber 9D functions as a **lubricant** chamber, into which oil 16 is injected through a injection port 15 and is reserved. An outer race of the submerged **bearing** 11 and a plurality of balls are soaked in the oil 16, wherein the submerged **bearing** 11 can be sealed and enclosed.



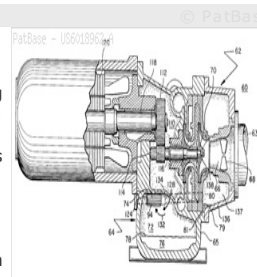
Probable Assignee: KUBOTA KK

Earliest Publication Date: 19980908

11) Family number: 11569532 (US6018962A)

CENTRIFUGAL COMPRESSOR OIL SUMP DEMISTER APPARATUS

Abstract: Source: US6018962A A refrigeration apparatus contains an oil sump having an interior portion. A housing is located, at least in part, within the oil sump interior. The housing has at least one inlet and at least one outlet. The inlet allows a vent gas stream to enter the housing and the outlet allows a vent gas stream to exit the housing. The inlet may be an aperture extending circumferentially around the housing about one-third to one-half of the housing's circumference. Additionally, the inlet should be above the surface level of any oil pool in the sump. A coalescing demister filter is located within the housing between the inlet and the outlet. The housing may include a wall for sheltering the filter from agitated areas of the gearbox. The filter is configured to remove substantially all of the oil from the vent gas stream. The filter may also have an outlet end which is sealed from the oil sump. The filter may also be pleated and enhances oil coalescence. The filter may be substantially hollow, having an inner surface and an outer surface. The inner surface may be in communication with the housing outlet and the outer surface may be in communication with the housing inlet. The apparatus may also contain a compressor which has a low pressure area, or suction cover. The outlet communicates with the suction cover interior and the low pressure area. The compressor low pressure area may be downstream of the compressor guide vanes and upstream of the compressor impeller.



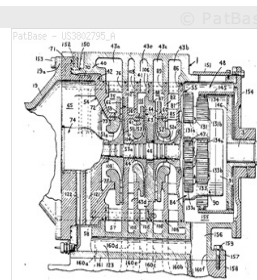
Probable Assignee: TRANE INT INC

Earliest Publication Date: 20000201

12) Family number: 1182492 (US3802795A)

MULTI-STAGE CENTRIFUGAL COMPRESSOR

Abstract: Source: US3802795A A low weight compact assembly consisting of a multi-stage in-line centrifugal compressor with driving means including, a compound epicyclic gear train having three double star gears and a multi-cooler housing which acts as a support base for the compressor, gear train, driving means and accessories therefor and as an intercooler for the first and intermediate compression stages of the compressor, an aftercooler and has cooling means for **lubricant** more particularly **lubricant** used in the compressor.



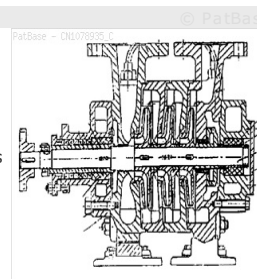
Probable Assignee: WORTHINGTON CEI

Earliest Publication Date: 19731108

13) Family number: 12282715 (CN1197167A)

OILLESS LUBRICATING ENERGY SAVING PUMP

Abstract: Source: CN1197167A An energy-saving **pump** without **lubricant** is a **horizontal** centrifugal **pump**, which features use of mechanical shaft coupler and self-lubricating **bearing** other than rolling **bearing**. Said self-lubricating bearing is immersed in **pumped** medium, so shaft neck is supported by a layer of liquid film between it and **bearing**, having low friction and abrasion. Its distance to support shaft is shorter, so the deformation of shaft is small, resulting in low drive power and vibration.



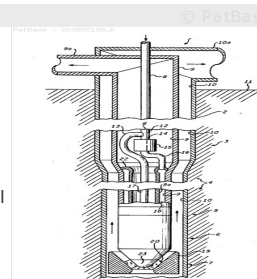
Probable Assignee: WU YUYUAN

Earliest Publication Date: 19981028

14) Family number: 1237026 (US3905196A)

GEOHERMAL ENERGY PUMP THRUST BALANCE APPARATUS

Abstract: Source: US3905196A A geothermal energy transfer and utilization system makes use of thermal energy stored in hot solute-**bearing** well water to generate super-heated steam from an injected flow of clean water; the super-heated steam is then used for operation of a turbine-driven **pump** at the well bottom for **pumping** the hot solute-**bearing** water at high pressure and in liquid state to the earth's surface. There, it is used by transfer of its heat content to a closed-loop boiler-turbine-alternator combination for the generation of electrical or other power. Cooled, clean water is regenerated by the surface-located system for re-injection into the deep well and the residual concentrated solute-**bearing** water is **pumped** back into the earth. Significant axial thrust is developed in the support **bearing** system of the steam turbine driven hot water **pump** because of the considerable pressure head rise generated by the hot water **pump**, the axial thrust being proportional to the hot water **pump** discharge pressure. According to the invention, a balancing thrust is developed that is also proportional to **pump** discharge pressure, so that the net thrust is minimized over a range of speed and hot water flow conditions.



Probable Assignee: SPERRY RAND CORP

Earliest Publication Date: 19750916

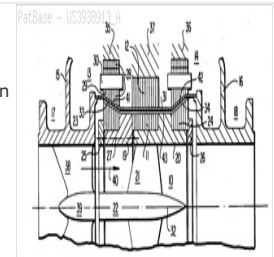
15) Family number: 1238300 (US3938913A)

FLOW MACHINE FOR AN AGGRESSIVE, RADIOACTIVE OR SPECIAL-PURITY FLOW MEDIUM

Abstract: Source: US3938913A A flow machine for **pumping** and/or measuring the flow of aggressive, radioactive, or special-purity flow mediums. The flow machine is provided with a rotatable impeller magnetically supported within a machine casing such that the impeller is spaced at all points from the inside walls of the machine casing. The casing inside walls and the outer configuration of the impeller include a central cylindrical center section joined by conically outwardly flared end sections. Electromagnetics are arranged in the conical flared section outside of the inside wall for cooperation with magnetic material arranged in the corresponding conically flared sections of the impeller to support the impeller in position. The conically flared section facilitate both radial and axial support of the impeller, since both axial and radial components of electromagnetic force is experienced at the conically flared sections of the impeller. Means are provided to detect the gaps around the circumference of the impeller between the impeller and the casing inside walls, which means provide signals to an electronic device for controlling the respective current supply to the electromagnets so as to assure the maintenance of a substantially uniform circumferential gap around the impeller for all operating conditions. In one embodiment, the flow machine is constructed as an axial flow **pump** driven by an asynchronous electric motor having a rotor formed around the cylindrical section of the impeller and a stator arranged outside of the inside walls along the cylindrical section thereof. A further embodiment of the flow machine is constructed as a flow meter which includes means for detecting the rotational speed of the impeller, which rotational speed is a direct function of the volumetric flow and/or velocity of the flow medium through the impeller.

Probable Assignee: MASCHF AUGSBURG NUERNBERG AG

Earliest Publication Date: 19730726



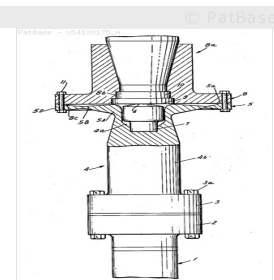
16) Family number: 1252613 (US4120175A)

FLEXIBLE SHAFT COUPLING

Abstract: Source: US4120175A A flexible shaft coupling wherein the flange of at least one of the shafts is flexible and its marginal portion is separably fastened to the marginal portion of the other flange. The flanges surround thrust transmitting elements which are urged against each other as a result of deformation of the flexible flange in response to fastening to the other flange. The flexible flange may be integral with or it may be separably fastened to the shank of the respective shaft. The flexibility of the coupling is enhanced if the flexible flange is provided with or mounted between knife edges which permit such flange to snap over in response to tilting of one shaft with respect to the other shaft and/or vice versa. The thrust transmitting elements may be integral with the respective shafts or they may constitute removable inserts. One of the thrust transmitting elements has a convex face which **bears** against a flat face of the other element so that the elements are in mere point contact with each other. The plane of the point of contact may but need not coincide with the plane where the marginal portions of the flanges abut against each other.

Probable Assignee: KLEIN SCHANZLIN AND BECKER AG

Earliest Publication Date: 19770331



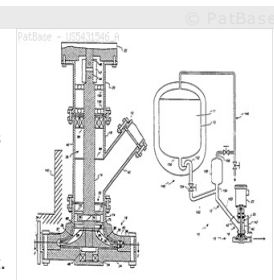
17) Family number: 12571934 (US5431546A)

APPARATUS FOR INTERMITTENT TRANSFER OF FLUID HAVING VAPOR TRAP SEAL AND VAPOR ESCAPE MEANS

Abstract: Source: US5431546A Fluid transfer apparatus comprising a fluid reservoir and a **pump** connected to the reservoir by a supply line, wherein the apparatus is configured so that vapor generated in the **pump** during periods of inoperation may escape from the **pump** cavity through the **pump** inlet, rather than being trapped in the **pump** cavity, and liquid may flow into the **pump** cavity from the supply line through the **pump** inlet to replace escaping vapor, thereby providing reliable **pump** start-up during intermittent operation. The apparatus may be employed to **pump** LNG for fueling of vehicles. Where LNG or another cryogenic fluid is being **pumped**, the **pump** is preferably driven by a motor located above the **pump** and connected thereto by an elongated shaft. Shaft seals may be provided to prevent the fluid being **pumped** from contacting the motor or the **bearings** supporting the motor shaft. A vapor trap may be provided beneath the shaft seals to prevent contact between liquid being **pumped** and the shaft seals.

Probable Assignee: PRAXAIR TECHNOLOGY INC

Earliest Publication Date: 19950224



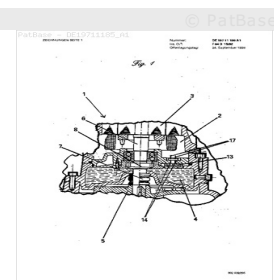
18) Family number: 13443455 (DE19711185A1)

IMMERSION MOTOR/**PUMP** UNIT FOR **PUMPING** WATER

Abstract: Source: DE19711185A1 The motor/**pump** unit has an electric motor (3) contained within an electric motor housing (2) from which a drive shaft (6) projects, for driving the **pump** stage (5). An intermediate chamber (4) between the motor housing and the **pump** stage is provided with sliding ring seals (7,8) for the drive shaft at either side and is filled with a lubrication and cooling medium for these seals. The integrity of the seals is monitored by detecting the filling level of the medium in the intermediate chamber via a mechanical level detector, controlling a switch for providing an optical and/or acoustic warning signal.

Probable Assignee: ARNSWALD WERNER DIPL ING 51427 BERGISCH GLADBACH DE

Earliest Publication Date: 19980924



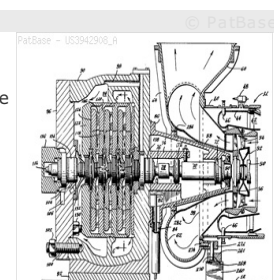
19) Family number: 1510436 (US3942908A)

GAS TURBINE DRIVEN HIGH SPEED CENTRIFUGAL COMPRESSOR UNIT

Abstract: Source: US3942908A A high speed centrifugal compressor is closely directly coupled to the power turbine of a two-shaft gas turbine having a gas generator section separate from its power turbine. The compressor stage assembly elements are conveniently interfitted together in the vertically split compressor casing by means of compression bolts minimizing fastening means. The gas turbine-compressor finds particularly useful application in areas where high power, compact, relatively maintenance-free units are required, as, for example, on offshore platforms in the natural gas industry.

Probable Assignee: NORWALK TURBO INC

Earliest Publication Date: 19750818



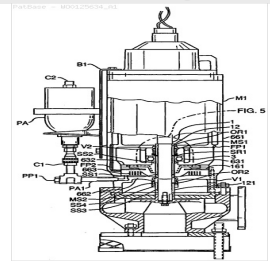
20) Family number: 15309361 (WO0125634A1)

SUBMERSIBLE MOTOR WITH SHAFT SEALS

Abstract: A submersible electric motor driven **pump** has a motor chamber and a **pump** chamber separated by a seal chamber. Inboard and outboard shaft seals (MS1, MS2) immersed in an oil buffer fluid within the seal chamber restricts the flow of liquid from the seal chamber into the **pump** and motor chambers. An integral or externally mounted pre-pressurized buffer fluid reservoir (PA) maintains a positive fluid pressure in the seal chamber relative to the external pressure at working depth, and maintains a suitable buffer fluid level within the seal chamber, in order to prevent the ingress of the **pumped** media through the outboard seal (MS2). A unique impeller design (631) circulates fluid within the seal chamber in the region of the outboard shaft seal (MS2), allowing continuous dry run operation when used in conjunction with an integrally cooled motor design. A cartridge shaft sleeve subassembly, having a **bearing** (3) configured between the inboard and outboard seals (MS1, MS2), facilitates maintenance.

Probable Assignee: LAWRENCE PUMPS INC

Earliest Publication Date: 20010412



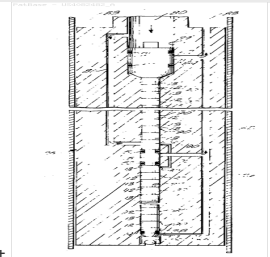
21) Family number: 1543630 (US4082482A)

ARTICULATED TURBINE PUMP

Abstract: Source: US4082482A An articulated, submersible turbine **pump** for installation in a vertically elongated bottom hole assembly of a well has a flexible shaft and a plurality of rotor elements and stator elements mounted about the shaft in adjacent alternating relationship. Each rotor element has rotatable blades attached to the shaft by a hub and a housing segment surrounding the rotatable blades in outwardly spaced relationship therefrom to provide clearance for rotation. Each stator element has a close fitting hub around the shaft, which serves as a journal **bearing**, a housing segment outwardly spaced from the hub, and stationary blades attached between the hub and the housing segment. The housing segments are longer than the blades and the hub. Matching conical surfaces are formed at opposite ends of the housing segments to seal adjacent housing segments when axially aligned. An annular relief on the periphery of one of the surfaces permits the housing segments to pivot out of axial alignment when the shaft bends. Axial rotation between the housing segments is prevented by a key and a recess at opposite ends of each housing segment; the key of one segment fits loosely into the recess of the adjacent segment.

Probable Assignee: KOBE INC

Earliest Publication Date: 19780404



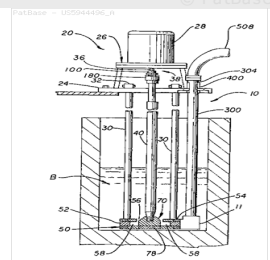
22) Family number: 16047754 (US5944496A)

MOLTEN METAL PUMP WITH A FLEXIBLE COUPLING AND CEMENT-FREE METAL-TRANSFER CONDUIT CONNECTION

Abstract: Source: US5944496A A molten metal **pumping** device is disclosed that comprises a **pump** base including at least one input port, a **pump** chamber, and a discharge leading to an output port. A rotor is retained within the chamber and is connected to a rotor shaft. The device further includes a superstructure attached to and positioned above the **pump** housing, a motor on the superstructure, a drive shaft connected to the motor and a coupling connecting the drive shaft to the rotor shaft. The rotor extends beyond the input port to deflect solid particles thereby reducing jams and preferably is a dual-flow rotor, directing molten metal both into the chamber and out through the discharge. The coupling is flexible and has two coupling members with a flexible disc disposed therebetween. Another aspect of the invention is a housing for a transfer **pump** that includes a discharge leading to an output port and a button adaptor extending from the discharge. The button is dimensioned so that it can connect to a metal transfer conduit without the use of cement thereby reducing maintenance costs and downtime. Further, the vertical members such as the support posts, metal transfer conduit and rotor shaft, may be sectional so that anti-corrosive materials may be used for the sections positioned in the most corrosive areas of the molten metal furnace. Additionally, a stationary component of the device may be configured to retain a thermocouple.

Probable Assignee: MOLTEN METAL EQUIPMENT INNOVATIONS LLC

Earliest Publication Date: 19980611



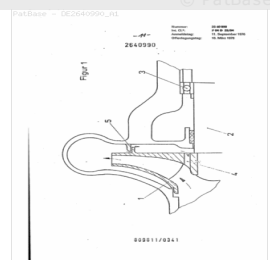
23) Family number: 1611895 (DE2640990A1)

KREISELPUMPE MIT SELBSTTÄETIGER AXIALSCHUBREGELUNG AN EINEM DER LAUFRAEDER CENTRIFUGAL PUMP WITH AXIALLY COMPENSATED IMPELLER - HAS AXIALLY FIXED BALANCE RING BEHIND AXIALLY FREE IMPELLER

Abstract: Source: DE2640990A1 Patentansprüche)Ein- oder mehrstufige Kreiselpumpe mit selbsttätiger Axialschubregelung an dem bzw den Laufrädern, da du r c h geke n n z e i chn et, dass das bzw die Laufräder mit der jeweiligen Nabenbohrung auf der jeweiligen Wellennabe (2) axial verschieblich und gegen Verdrehen gesichert gelagert und mit Entlastungsbohrungen (4) sowie einem druckseitigen Dichtspalt (5) der gegenueber einem saugseitigen Dichtspalt (7) auf groesserem Durchmesser liegt versehen sind, wobei ebenfalls auf der jeweiligen Wellennabe (2) ein mit Wellendrehzahl rotierendes, gegenueber der Welle gegen Verdrehen gesichertes, axial fixiertes Teil angeordnet ist, welches gegebenenfalls zusammen mit der druckseitigen Laufrädrückwand und den Laufrädrbohrungen (4) einen veraenderlichen Regeispalt bildet 2. A centrifugal **pump** has a shaft (2) on which an impeller (1) is keyed (6) to have axial but not rotational freedom of movement. There is a sealing orifice gap (5) between the back of the impeller and the casing and a similar gap (7) at a smaller diameter between the front of the impeller and the casing. There are pressure equalising apertures (4) through the impeller below the blade entry. A balance ring (8) is keyed to the shaft behind the impeller to have neither axial nor rotational freedom of movement. As the impeller (1) moves axially the gap (9) between the equalising openings and the balance ring varies with a resulting variation in pressure which controls the axial movement of the impeller.

Probable Assignee: KLEIN SCHANZLIN AND BECKER AG

Earliest Publication Date: 19780316



24) Family number: 16411229 (DE7628479U1)

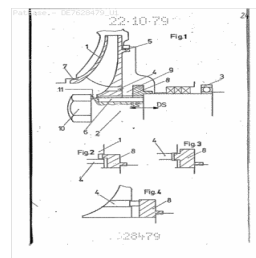
KREISELPUMPE MIT SELBSTTÄETIGER AXIALSCHUBREGELUNG AN EINEM DER LAUFRAEDER CENTRIFUGAL PUMP WITH AUTOMATIC AXIALSCHUBREGELUNG THE WHEELS ON A (MACHINE TRANSLATION)

Abstract: Source: DE7628479U1 (Claim 1) 1. Ein- oder mehrstufige Kreiselpumpe mit selbsttaetiger Axialschubregelung an dem bzw. den Laufraedern, dadurch gekennzeichnet, dass das bzw. die Laufrader mit der jeweiligen Nabenbohrung auf der jeweiligen Wellennabe (2) axial verschieblich und gegen Verdrehen gesichert gelagert und mit Entlastungsbohrungen (4) sowie einem druckseitigE Dichtspalt (5) der gegenueber einem saugseitigen Dichtspalt (7) auf grosserem Durchmesser liegt versehen sind, wobei ebenfalls auf der jeweiligen Wellennabe (2) ein mit Wellendrehzahl rotierendes, gegenueber der Welle gegen Verdrehen gesichertes, axial fixiertes Teil angeordnet ist, welches gegebenenfalls zusammen mit der dr@ ckseitigen Laufradrueckwand und den Laufradboreungen (4) einen veraenderl ichen Regelspalt bildet.

Machine translation: (Claim 1) 1 Single or multistage centrifugal **pump** with automatic Axialschubregelung where or the drive wheels, wherein the or the running wheels mounted to the respective hub bore on the respective shaft hub (2) secured axially displaceable and against turning with relief holes (4) and a pressure-side sealing gap (5) of the opposite a suction seal gap (7) to large diameter lies are provided, being also on the respective shaft hub (2) arranged one with shaft speed rotating, opposite the shaft against rotation secured axially fixed part, which is optionally together forms with the dr @ ckseitigen Laufradrueckwand and the wheel wells (4) a document number usually veraenderl gap.

Probable Assignee: KLEIN SCHANZLIN AND BECKER AG 6710 FRANKENTHAL

Earliest Publication Date: 19800117



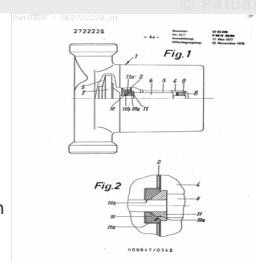
25) Family number: 1650939 (DE2722228A1)

GLEITLAGER FUER UMWAEHZPUMPEN PLAIN **BEARING** FOR ROTARY **PUMP** FOR HEATING OR WATER SYSTEM - IS SELF-ALIGNING AND HAS MATING FRUSTO-CONICAL SURFACES ON INNER AND OUTER RINGS

Abstract: Source: DE2722228A1 Patentansprueche Gleitlager fuer Umwaelzpumpen, dessen eines als Lagerring ausge bildetes Lagerelement von einer Trennwand gehalten wird, welche das **Pumpengehaeuse** in einen den Rotor des elektrischen Antriebs motors aufnehmenden Rotorraum und einen das **Pumpenlaufrad** auf nehmenden **Pumpenraum** unterteilt, waehrend das andere Lagerelement mit der den Rotor und das Laufrad tragenden **Pumpenwelle** umlaeuft, dadurch gekennzeichnet. The **pump** housing is divided by a wall (2) into a section in which the drive (3) is mounted and a **pump** section (5) in which the **pump** rotor (7) is mounted. The **bearing** is mounted in the wall between the two sections. The **bearing** consists of outer ring (10) which is fixed in the wall and a **bearing** inner ring (11) which is mounted on the drive shaft and rotates with it. The sliding surfaces between the rings are conical, diverging towards the drive section. The outer ring also has a cylindrical **bearing** area (10b). The axial projected area of the **bearing** surface is at least equal to the section of the drive shaft.

Probable Assignee: GRUNDFOS AS

Earliest Publication Date: 19781123



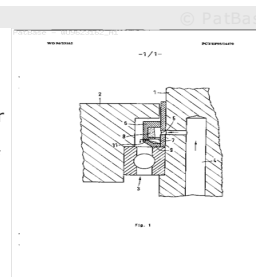
26) Family number: 17011760 (WO9623162A1)

LUBRICATING PROCESS AND LUBRICATING DEVICE FOR A VERTICAL SHAFT **BEARING**

Abstract: The invention concerns a lubricating process and a lubricating device for a vertical shaft **bearing**. In order to prevent insufficient lubrication whilst a machine is starting, an oil supply (8) is established in a first chamber (6) at a rotational speed of the shaft which corresponds to the normal running of the machine. The oil from this supply (8) flows into a further chamber (9) when the machine slows down. During a subsequent re-starting phase of the machine, before the feed mechanism in the oil feed duct (4) of the shaft (1) comes into action, the oil in the further chamber (9) is fed to the **bearing** (3) to be lubricated.

Probable Assignee: LEYBOLD AG

Earliest Publication Date: 19960801



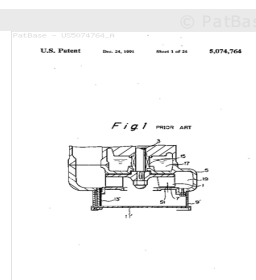
27) Family number: 17121977 (US5074764A)

SUBMERGIBLE MOTOR **PUMP**

Abstract: Source: US5074764A A submergible motor **pump** including a vortex impeller (2) attached to an end of a motor shaft (3), a **pump** casing (21,23) attached to a motor casing (25) and accommodating the impeller (2) therein, a strainer (9) attached to the **pump** casing for introducing water to be sucked into the **pump** casing, and a bottom plate (11) supporting the strainer (9) from therebelow is disclosed. The **pump** casing comprises an intermediate casing member (21) and a lower casing member (23), which are detachable from each other. The **pump** casing has a configuration in which the upper side is open so that the flow passage formed in the lower casing member does not have a bag-shaped configuration. A plurality of legs (29) are provided on the lower side of the lower casing member (23) as being integral portions thereof. The legs (29) are spaced apart from each other and extend as far as the outer peripheral end of the lower casing member (23). The strainer (9) is provided around the outer peripheral end of the lower casing member in such a manner as to surround the outer periphery of the lower casing member (23). The lower casing member (23) is clamped between the bottom plate (11) and the intermediate casing member (21) by means of clamping bolts (13), thereby assembling together the bottom plate (11), the lower casing member (23) and the strainer (9) in one unit.

Probable Assignee: EBARA CORP

Earliest Publication Date: 19901010



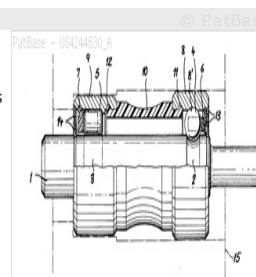
28) Family number: 1745895 (US4244630A)

JOURNAL MOUNTING FOR THE SHAFT OF A WATER **PUMP** OR THE LIKE

Abstract: Source: US4244630A A **pump** shaft is journaled in a housing through the intermediary of two metal rings forming the outer races of a ball **bearing** and a roller **bearing** whose rotary bodies are in direct contact with the shaft. The two **bearing** rings, which are relatively axially shiftable during assembly, are interconnected by a sleeve preferably of synthetic resin which they engage with a snap fit. The outer diameter of the sleeve is less than that of either ring; the two outer ring diameters may also differ in size from each other.

Probable Assignee: KUGELFISCHER G SCHAEFER AND CO

Earliest Publication Date: 19800403



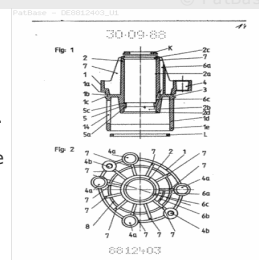
29) Family number: 17634856 (DE8812403U1)

Abstract: Source: DE8812403U1 (Claim 1) 1. Lagergehaeuse fuer Fluidpumpend, beispeisweise Kuehlwasserpumpenan Fahrzeugmotoren oder dergl., das mit dem iotorb lock oder dergl. verbunden ist und am Ende des Lagerzylinders, vor dem Foerderraum der **pumpe**, eine Aufnahme fuer ein Dichtmittel besitzt, dadurch gekennzeichnet, dass dasselbe aus Kunststoff besteht und dass am lagerzylinder (2) axial verlaufende Rippen vorgesehen sind, die Im Flanschbereich in einen annaeherd ringfoermig umlaufenden Flanschbund (1) uebergehen.

Machine translation: (Claim 1) 1 Lagergehaeuse for Fluid **Pumping**, beispeisweise Kuehlwasserpumpenan vehicle engines or the like, which the iotorb lock or the like is connected and at the end of Lagerzyl Indian, before Foerderraum the **pump**, a record for having a sealing means, characterized in that it consists of plastic and that the storage cylinder (2) axially extending ribs are provided, which go over the flange in a nearly annular flange collar (1).

Probable Assignee: THYSSEN POLYMER GMBH 8000 MUENCHEN DE

Earliest Publication Date: 19900125



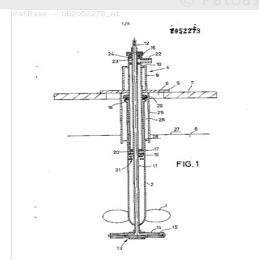
30) Family number: 1798042 (GB2052278A)

FLUID FLOW APPARATUS

Abstract: Source: GB2052278A A fluid flow apparatus such as a mixer or **pump** having a shaft 11 which is rotatably mounted on a normally downwardly extending **bearing** arm by means of a **bearing** 17 which in use is located below the liquid surface 27 of, for example, liquid manure, characterised by the feature that the **bearing** is enclosed by a cover tube 2 and closed or sealed-off relative to the liquid free of sliding seal means. Further protection may be provided by a ball-like member 25 which retains the liquid level 28 within the ball lower than that on the outside. The shaft 11 may be hollow so that gas supplied at an inlet 22 can be fed to a ventilation device 13.

Probable Assignee: STREICHER FOERDERTECH

Earliest Publication Date: 19800526



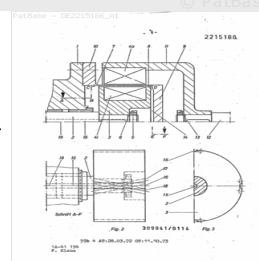
31) Family number: 18034604 (DE2215186A1)

STOPFBUECHSLOSE CHEMIEKREISELPUMPE MIT SPALTROHR STOPFBUECHSLOSE CHEMISTRY CENTRIFUGAL **PUMP** WITH CANNED (MACHINE TRANSLATION)

Abstract: (Claim1) ANSPR8CHE; Stopfbuechsllose Chemiekreislumpe mit Spaltrohr (spaltrohr **pumps**) with component current guidance on the inside for the lubricating and cooling circuit, in particular with **horizontal pump** motor shaft, with which at least one part of the component current of the **pumping** liquid between the interior runner of the Spaltrohrs and the gap pot into the rear rotor area and from this through a wave drilling, oil grooves and the axial play of the rear camp in suck area of the impeller flows, dadurchgekennzeichnetdass on the outer circumference of the interior runner longitudinal slots (16, 17, 18) are intended.

Probable Assignee: KLAUS FRANZ

Earliest Publication Date: 19731011



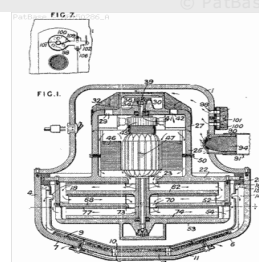
32) Family number: 18221761 (GB150286A)

IMPROVEMENTS IN AND RELATING TO CENTRIFUGAL **PUMPS** FOR USE WITH PNEUMATICALLY OPERATED MECHANISMS

Abstract: Source: GB150286A 150,286. Cramer, S. S. Aug. 21, 1919, [Convention date]. Exhausting air expressioncontrolling.-A pneumaticallyyoperated piano-player is connected to the casing of a centrifugal **pump** driven by an electric motor a spring-controlled valve for relieving the vacuum is secured to the casing, and is set at its minimum limit to permit air to enter to cool the motor it may be moved by hand to permit air to enter at varying rates. The casing is constructed to minimize the sound escaping. The casing is made in two parts 1, 4, Fig. 1, and the inner surface of the sections 6. 7 are covered with fibrous material 9, with apertures 10 registering with apertures 8 in part 7 of the casing. A baffle-plate 11 with sound-insulating walls is secured on the outside of the casing bottom. A pipe 91 from the piano mechanism conveys air to a large aperture 90 in the casing, and the opening is screened by a mesh section 94, Air is also admitted through apertures 98 which may be opened to varying degrees by means of a cover disk 100 with a similar series of apertures and which can be rotated on a spindle 101. The disc has an operating-arm 102 movable between limit screws 106, and held by a spring 109 in a predetermined position to permit air to enter to cool the motor under any conditions, The disc 100 may be adjusted to allow a high pressure in the piano mechanism to produce sounds of low intensity or to produce loud crash music. The complete arrangement may be supported on flexible supports inside or outside the piano.

Probable Assignee: STANLEY STACEY CRAMER

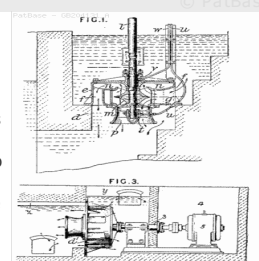
Earliest Publication Date: 19210714



33) Family number: 18494039 (GB204131A)

IMPROVEMENTS IN AND CONNECTED WITH CENTRIFUGAL TURBINE **PUMPS**

Abstract: Source: GB204131A 204,131. Gwynnes Engineering Co., Ltd., and Breeze, J. F. June 23, 1922. Disc-supported blad'e **pumps** casings.-In a centrifugal **pump** with a double entry impeller for submerged working, the two inlets for the impeller m are provided with separate admissions so that the suction of one impeller element does not interfere with that of the other. In the arrangement shown in Fig. 1, the impeller m is supported by a vertical shaft l and has a casing e which rests on a footing d in the water chamber. A downwardly-flared nozzle p is bolted to the casing and forms a central inlet for the supply of one side of the impeller. Passages,f parallel to the axis and arranged near the periphery of the casing are connected by radial passages n to the upper eye for the supply of the other side of the impeller. Discharge channels alternate with the passages f and communicate with the discharge outlet g. The **bearings** t, v are supplied with **lubricant** through the pipes u, w. In the modification shown in Fig. 3, the axis of the **pump** is **horizontal** and the **pump** is mounted on a vertical partition d<1> which separates the low-level chamber z from the highlevel chamber y. The **pump** spindle passes through a stuffing-box 3 into a dry chamber 4 containing a motor 5 for operating the **pump**, or the **pump** spindle may be coupled' to a submersible electric motor.



Probable Assignee: GWYNNE ENGINEERING CO LT

Earliest Publication Date: 19230924

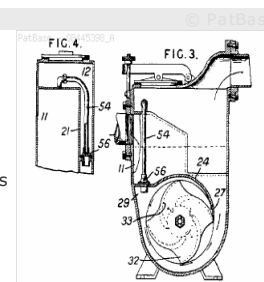
34) Family number: 18942181 (GB445398A)

SELF-PRIMING CENTRIFUGAL PUMPS

Abstract: Source: GB445398A 15616. [Class 110 (i)] Air is withdrawn from the suction chamber of a centrifugal pump by an injector fed by liquid from the discharge part of the discharge flow back to the impeller chamber 29 through converging apertures 56 in a pipe 54 and thus draws air from the top of the suction chamber 11. The discharge impeller chambers 12, 29 are separated by a wall 24 terminating in a seal 27 and the discharge and suction chambers by a vertical wall 21. The impeller comprises a circular plate 32 with arc-shaped vanes 33 and it is positioned on the shaft by sleeves. The bearing housing is mounted as a unit on the pump casing.

Probable Assignee: NOVO ENGINE CO

Earliest Publication Date: 19360408



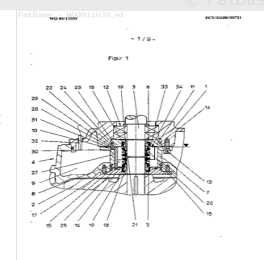
35) Family number: 18942695 (ZA8901315A)

SUBMERSIBLE MOTOR-DRIVEN PUMP

Abstract: In known submersible motor-driven pumps, an intermediate chamber (4) filled with a lubricant or coolant, e.g. oil, is arranged between the motor housing (1) and the hydraulic element (2). A separating wall (7) arranged in the intermediate chamber (4) around, and at a distance from, the motor shaft (3) extends over at least part of the chamber height and divides the intermediate chamber (4) into inner and outer annular chambers (8, 9) interconnected by an overflow (10).

Probable Assignee: ABS PUMPEN AG

Earliest Publication Date: 19891115



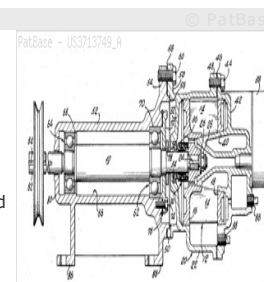
36) Family number: 19273660 (US3713749A)

MOTOR-DRIVEN PEDESTAL-MOUNTED PUMP ASSEMBLY AND METHOD FOR MANUFACTURING THE SAME

Abstract: Source: US3713749A A motor driven pedestal pump assembly and a method for manufacturing same are disclosed. The assembly has a housing which may include one or two members. The housing supports the bearings and the elongated drive shaft and houses the pump rotor of the pump assembly. One of the housing members, which may be the sole member, has a bearing bore at one end and a mounting face at the other end. This housing member is hollow and is constructed so that the mounting face and the bearing bore can be machined from one end during a single set up.

Probable Assignee: NASH ENGINEERING CO

Earliest Publication Date: 19690610



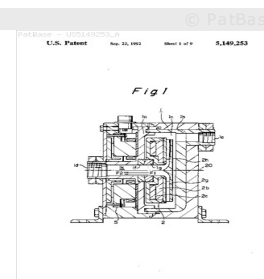
37) Family number: 19275390 (US5149253A)

MAGNET PUMPS

Abstract: Source: US5149253A A magnet pump in which an impeller having a permanent magnet embedded therein is rotatably driven by a magnetic force from the outside of the impeller is disclosed. The pump comprises a pump casing including a suction port, a discharge port and a pumping chamber in which the impeller is contained. The impeller is rotatably contained in the pumping chamber of the casing and has the permanent magnet embedded therein. A pair of bearings, one being fixed to the casing and the other being fixed to the impeller is provided. A magnetic force driving mechanism constitutes a means for affording the magnetic force on the permanent magnet within the impeller to rotatably drive the latter. The magnetic force driving mechanism is mounted on a non-liquid-contacting portion of the casing at a position facing the impeller in respect to the direction of the rotary shaft axis of the impeller. A fluid inlet passage for communicating between the suction port and the pumping chamber is formed to pass through the center portion of the magnetic force driving mechanism.

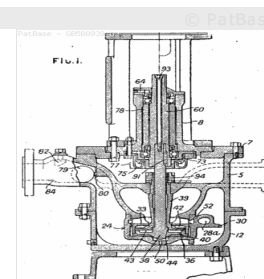
Probable Assignee: EBARA CORP

Earliest Publication Date: 19901212



38) Family number: 19277912 (GB588939A)

IMPROVEMENTS IN OR RELATING TO VERTICAL SELF-PRIMING PUMPS



Abstract: Source: GB588939A [Classes 110 (i) and 122(v)] A vertical self-priming **pump** of the kind described in Specification 559,086 is modified to improve the priming action and the liquid seal and to facilitate disassembly and replacement. The casing 24, Fig. 1, forming the impeller and liquid-seal chamber is made as a separate piece. Its exterior has two arcuate flanges 30, the **pump** discharge ports 28a lie above these flanges and the priming entry ports below. The lower wall 36 of the rotary seal box is formed with blades 43 which have a radial limit shorter than that of the blades 42 on the upper wall 33. The sealing sleeve 39 has a recessed surface which lies near to the shoulder 44 on the impeller shaft 38. When the sleeve 39 is forced downwards, in disassembling, by screwing its nut 94 against the undersurface of the motor shaft 60, the recessed surface and shoulder 44 contact and, thereby, stressing the sealing disc 40 is avoided. The priming action is improved by means of air vents 52 from the discharge ports and a liquid inlet 50 at the bottom of the **pump** chamber and, it may be, a similar liquid inlet in the side wall of the chamber. A ball 79 is located in the discharge pipe between a stop 80 and stops 82, 84. In the position shown, it serves to retard the back-flow from the discharge when the **pump** stops. Against the stops 82, 84 it leaves a free passage for the **pumped** liquid. The **bearing** pillar 8, which is carried by a cover-plate 7 and supports the motor shaft 60, has a sleeve 78 substantially filling the space between the ball-races and thereby reducing the **pumping** action due to changes of temperature of air enclosed by the sleeve. The impeller shaft is received within the motor shaft, is secured endwise therein by a bolt 93 and is keyed to it at 91. **Lubricant** is introduced at 64, drains into an annular trough 75 and is withdrawn at 77. A cup-like flange 73 keeps the lower **bearing** full of oil when the **pump** is stopped. In a modified construction, the casing parts 5, 12 and the impeller chamber 24 are made of porcelain. Specification 570,212 and U.S.A. Specifications 1,578,236 and 2,291,478 also are referred to.

Probable Assignee: HARRY E LABOUR

Earliest Publication Date: 19470606

39) Family number: 19315743 (DE439951A)

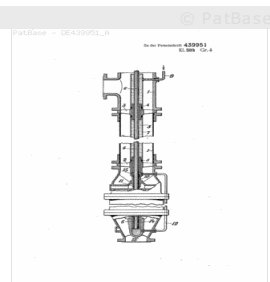
PUMPE, TURBINE ODER AEHNLICHE MASCHINE MIT UNTER WASSER LIEGENDER ANTRIEBSWELLE PUMP TURBINE OR SIMILAR MACHINE WITH UNDERWATER OVERHEAD SHAFT (MACHINE TRANSLATION)

Abstract: Source: DE439951A (Claim 1) 1. PATENTANSPRUCHII: **Pumpe**, Turbine oder aehnliche Maschine, bei welcher die Welle und deren Lagerung in einem fluessigkeitsdichten, mit einer Schmierfluessigkeit angefuellten Gehaeuse eingeschlossen ist und in welchem die zwischen den einzelnen Lagern gebildeten Kammern nur durch den zwischen der Welle und den Lagerschalen gebildeten Durchlass untereinander in Verbindung stehen, dadurch gekennzeichnet, dass an der Stelle, wo die Welle aus dem **Pumpengehaeuse** austritt, ein mit dem Saugraum der **Pumpe** bzw. mit der Aussenluft verbundener Raum geringeren Druckes als der in der **Pumpe** herrschende vorgesehen ist, in welchen die Schmierfluessigkeit um die Welle herum abgeleitet wird.

Machine translation: (claim 1) 1 PATENTANSPRUCHII: **pump**, turbine or similar surface machine, in which the shaft and its storage in a fluessigkeitsdichten, enclosed with a Schmierfluessigkeit angefuellten enclosure is and to what chemical that is formed between the different camps chambers only by between between the shaft and the **bearing** shells the formed passage with each other in conjunction bond, characterized in that at the point where the shaft emerges from the **Pumpengehaeuse**, a is provided with the suction chamber of the **pump** or with the outside air connected space of lower pressure than the pressure prevailing in the **pump**, in which the **lubricant** is derived liquid around the shaft.

Probable Assignee: SULZER AG

Earliest Publication Date: 19270121



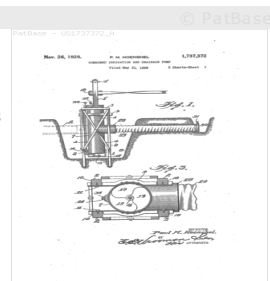
40) Family number: 19574385 (US1737372A)

COMBINED IRRIGATION AND DRAINAGE PUMP

Abstract: Source: US1737372A 1. In an apparatus of the class described, the combination with vertical uprights, of a main casing between said uprights, **horizontal** brackets L-shape in cross section fastened intermediate their ends to the outer face of said casing, said brackets provided near their ends with notches in the **horizontal** flanges, said vertical uprights positioned in said notches, fastening means extending through the vertical flanges of the brackets into said I 1,va'r,sve uprights, said main casing provided with pipe or culvert receiving means on its side, and water propelling means within said cas-

Probable Assignee: MAYACA CO

Earliest Publication Date: 19291126



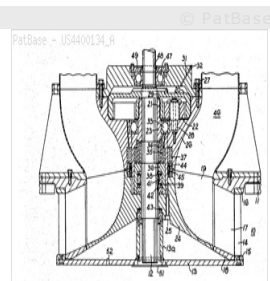
41) Family number: 1967022 (US4400134A)

COLLECTOR APPARATUS

Abstract: Source: US4400134A **Pumping** apparatus for collecting polluted liquids such as oil on water and including a first **pumping** stage comprising a rotatable annular rotor having curved blades shaped to draw liquid inwardly towards the center of rotation, and stationary blades disposed within the rotor blades to receive liquid into the spacers between the center, and a further **pumping** stage having rotatable blades shaped to receive the liquid from the stationary blades and deliver it under pressure in an upward direction to an outlet. The **pumping** apparatus may be mounted on a flotation unit which is suitable for collection of oil from the surface of water.

Probable Assignee: EUROTECH INT LTD

Earliest Publication Date: 19810823



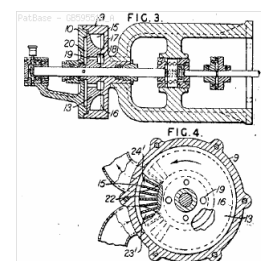
42) Family number: 19748077 (GB595511A)

ROTATING PUMPS

Abstract: Source: GB595511A 12456. [Classes 110 (i) and 122 (v)] A rotary **pump**, comprising a **pump** casing 9, having a removable cover 10, encloses a rotor 13 having a plurality of radial blades 15, an annular recess 16 being provided in the 'end wall of the **pump** casing with a partition 22 extending across it to isolate the inlet 23 <1> from the outlet 241. The **pump** cover 10 has a recess 20 forming a chamber with the adjacent face of the rotor and the end wall of the casing 9 has a recess 18 which, with a recess 17 in the rotor, forms a second chamber in open communication with the first chamber through passages 19 in the rotor 13, the arrangement being such that liquid escaping between the rotor 13 and the casing 9 will accumulate in the said chambers to constitute a hydraulic seal between the rotor and casing.

Probable Assignee: ARGIMIRO RODRIGUEZ PATO

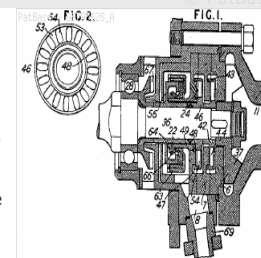
Earliest Publication Date: 19471208



43) Family number: 19793671 (GB795628A)

DYNAMIC SEAL FOR A LIQUID PUMP

Abstract: Source: GB795628A 795,628. Stuffing-box substitutes; centrifugal pumps. ALLIS-CHALMERS MANUFACTURING CO. July 3, 1956, No. 20547/56. Classes 110 (1) and 122 (5). A sealing means for the substantially horizontal rotary shaft 36 of a pump suitable for pumping corrosive or other liquids comprises a rotor 46 which is mounted on the shaft and provided on one side with an annular flange 48 and deflecting means 53 extending between the flange and the periphery of the rotor, and a groove 24 which is formed in the casing of the pump for the reception of the flange 48 and has an inner face 49 so disposed that the radial distance from the axis of the pump to at least one point on such face is less than the radial distance from the axis to the outer edge of the face. The inner face of the groove 24 may be of frusto-conical form as may also be its outer face. Liquid entering the pump at 11 is centrifuged by the impeller 37. Leakage from the casing is prevented first by a rotor 42 having a flange 43 and recesses 44 whereby the liquid is turned back radially, and then by the rotor 46. This rotor 46 may optionally be provided with an outer flange 47 and the ribs 53 constituted by blades provided between recesses 54. The casing of the pump is built up of separate parts 6, 7, 8 recessed to receive the two rotors. A sleeve 22 carried by the casing part 8 co-operates with an L-section silicone rubber packing 64 to seal the outer face of the sleeve when the pump is stationary. This packing is clamped against a flanged member 56 on the shaft 36 by a clamping nut 63 and, while urged against the sleeve 22 by a garter spring 66 when the pump is inoperative, is disengaged by centrifugal action when the pump is working. A drain conduit 69 is connected with the cavity in which the seal 64 is located. An oil-slinger 67 prevents contamination of the fluid being pumped by oil leakage from the bearing 28.



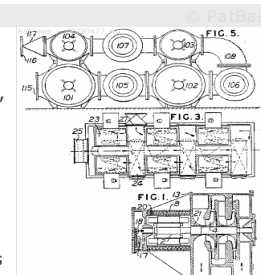
Probable Assignee: ALLIS CHALMERS MFG CO

Earliest Publication Date: 19580528

44) Family number: 19872540 (GB798477A)

IMPROVEMENTS IN AND RELATING TO CENTRIFUGAL COMPRESSORS

Abstract: Source: GB798477A 798,477. Centrifugal compressors. BRITISH THOMSON-HOUSTON CO., Ltd. June 11, 1956 [June 14, 1955; Dec. 23, 1955], Nos. 17138/55 and 36900/55. Class 110 (1). A plant for extracting a gaseous medium, as from a steam condenser, comprises a number of centrifugal compressors, each directly driven by an alternating current electric motor, and one or several frequency changer or alternator sets to supply current to the motors at a frequency or frequencies substantially higher than conventional power frequency to produce a motor speed as required for operation at favourable efficiency of each of the compressors. Fig. 1 shows a two-stage centrifugal compressor driven by a high-frequency alternating current motor 2. The casing 13 is of one-piece construction, the impellers, diffusers and interstage diaphragm being arranged for endwise assembly. Air admitted through a valve 20 circulates through the motor and enters the compressor inlet past a shaft gland 21. The motor is surrounded by a cooling water-jacket 8. A lubricant pump 17 is driven through gearing 18. The plant shown in Fig. 3 comprises six such compressors mounted on a common baseplate, the two low-pressure compressors 23 being connected in parallel, and the remaining compressors being connected in series. Intercoolers 24, an inlet 25 with a butterfly valve, and a discharge 27 with a non-return valve are provided in the base-plate. All the motors are supplied at the same high frequency. Connections for by-passing any compressor becoming faulty may be provided in the base-plate. Fig. 5 shows a plant in which the high-pressure compressors 103, 104 are supported by the low-pressure compressors 101, 102. Intercoolers 105, 106 and 107 and a curved duct 108 are provided. The outlet 116 is adjacent the inlet 115 and has a non-return valve 117. Preferably, the supply frequency of the motors driving the compressors 103, 104 is higher, at say 275 cycles per second, than the supply frequency of the motors driving the compressors 101, 102, which may be 200 cycles per second.



Probable Assignee: BRITISH THOMSON HOUSTON CO LTD

Earliest Publication Date: 19580723

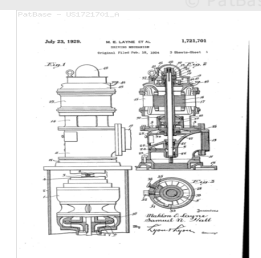
45) Family number: 19875452 (US1721701A)

DRIVING MECHANISM

Abstract: Source: US1721701A 1. In a mechanism of the -class described, the combination of a rotary pump, a discharge casing extending vertically from the pump, motor for driving the pump including a rotating member mounted on a hollow power member, a shaft extending from the pump to and through said member, an adjusting member secured to said shaft, a bearing above the motor, a bearing below the motor connected to the power member, and distributing means engaging said adjusting member and connected to said power member and said first mentioned bearing so as to distribute vertical thrust from said pump shaft between said bearings.

Probable Assignee: LAYNE AND BOWLER CORP

Earliest Publication Date: 19290723



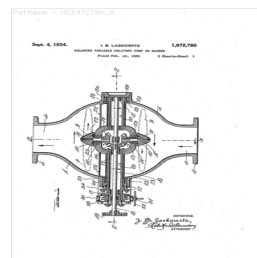
46) Family number: 19890960 (US1972780A)

BALANCED VARIABLE DELIVERY PUMP OR BLOWER

Abstract: Source: US1972780A 1. In a **pump** or blower structure of the class described, a casing provided with aligned fluid inlet and outlet openings, a **pumping** or blower unit arranged centrally within the casing and including a housing mounted for swingable movement about a **horizontal** axis, a pair of oppositely pitched propellers mounted on the housing and facing the respective openings in the casing, a drive shaft extending through one side of the casing and into said housing, propeller shafts mounted on the housing for supporting the respective propellers, coaxing means between the drive shaft and the propeller shafts for causing the rotation of the propeller shafts in opposite directions, and means for moving the unit about its **horizontal** axis to position the propeller at any predetermined angle of inclination to vary the discharge of the fluid.

Probable Assignee: LASKOWITZ ISIDOR B

Earliest Publication Date: 19340904



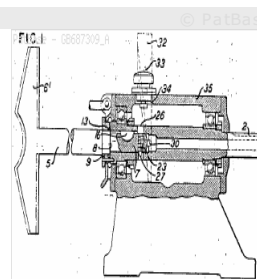
47) Family number: 19952372 (GB687309A)

IMPROVEMENTS IN SHAFT CONNECTION

Abstract: Source: GB687309A 687,309. Extracting studs from shafts. LA BOUR CO., Inc. Nov. 29, 1950 [Oct. 9, 1950], No. 29299/50. Class 61 (iii). [Also in Group XXIV] The shaft 5 of a rotary impeller 6' is integral with a stud 7 fitting into a co-operating socket in a driving shaft 2, the assembly being mounted in ball-**bearings** in a housing 35. The two shafts 5, 2 are connected by a Woodruff key 16 engaging a keyway in the wall of the socket and by a screwed pin 23 in a transverse bore in the stud 7 engaging the shoulder of a hole 27. The pin 23 is of such a length that it may be withdrawn completely into the transverse bore. When separating the two shafts, the pin 23 is withdrawn into the transverse bore by means of a wrench inserted through a hole 34 in the housing 35 engaging a hexagonal socket in one of its ends. A drift 32 is then inserted through the hole 34 and through one of two holes 30 in the socket, offset by 90 degrees from the hole 27 and removed axially therefrom, the wedging action of the tool urging the stud 7 axially out of the socket. The drift 32 is provided with longitudinal bars 33 which engage with the wall of the housing 35 when the limit of travel has been reached, so that unnecessary pounding of the drift may be avoided. Specification 588,939, [Group XXVI], and U.S.A. Specification 2,134,255 are referred to.

Probable Assignee: BOUR CO INC

Earliest Publication Date: 19530211



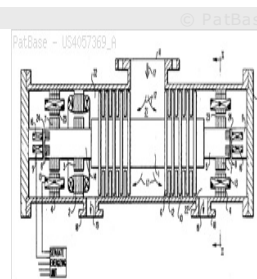
48) Family number: 2002071 (US4057369A)

VACUUM **PUMP** HAVING A ROTOR SUPPORTED IN THE INTERIOR OF ITS CASING

Abstract: Source: US4057369A The present invention relates to magnetic support of the rotor structure in vacuum **pumps**, particularly turbomolecular **pumps**. This magnetic support eliminates the requirements for **bearing lubricants**, and the consequent degradation of the vacuum to be produced by **lubricant** vapors.

Probable Assignee: MASCHF AUGSBURG NUERNBERG AG

Earliest Publication Date: 19750206



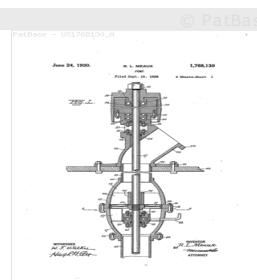
49) Family number: 20021553 (US1768130A)

PUMP

Abstract: Source: US1768130A 1. What is claimed is: In a pump, a casing, an axially extending rotary shaft and an impeller secured thereto for rotation therewith, said impeller including a hub, a rim and radiating blades of the same width throughout their length and gradually increasing pitch from the inner ends to the outer ends, the trailing edge of each of said blades being disposed in radial alignment with the axial center of the impeller and the leading edge of each blade being disposed out of radial alignment with the axial center of said impeller

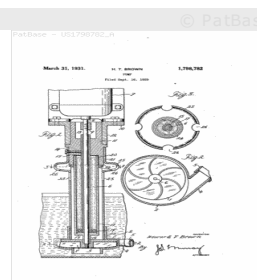
Probable Assignee: MEAUX ROBERT L

Earliest Publication Date: 19300624



50) Family number: 20024631 (US1798782A)

PUMP



Abstract: Source: US1798782A What I claim is : 1. In a device of the character described, the combination with a centrifugal **pump** comprising an impeller and its casing, of a drive shaft carrying said impeller, a stationary tubular member surrounding said shaft, a sleeve spaced from and surrounding said tubular member and secured to said shaft between the impeller and tubular member, a rigid support for said tubular member journaling the upper end of said sleeve, and a **bearing** between the lower portion of said tubular member and said sleeve.- 2. A **pump** and drive shaft assembly comprising a substantially vertical shaft, an impeller on the lower portion of said shaft, a casing for said impeller, a sleeve coaxial with said shaft forming a **lubricant** chamber, means rigidly mounting said sleeve on said shaft, a fitting journaling the upper end of said sleeve, a stand pipe carried by said fitting coaxially with said shaft, surrounding said sleeve and carrying and communicating with said casing, said stand pipe having an outlet in its upper portion, and a **bearing** journaling the lower portion of said sleeve and receiving **lubricant** from said chamber. ' 3. In a **pump** and drive shaft assembly, a vertical shaft, a **pump** impeller fast on said shaft, a **pump** casing enclosing said impeller, a stationary tubular member surrounding said shaft, a sleeve surrounding and spaced from said tubular member, means rigidly mounting said sleeve upon said shaft between said tubular member and the impeller, and a common support for said tubular member and the **pump** casing, journaling the upper end portion of said sleeve. 4; In a **pump** and drive shaft assembly, the combination with a centrifugal **pump** comprising an impeller and its casing, of a drive shaft carrying said impeller, a substantially tubular member surrounding said shaft extending at one end adjacent to said impeller, a sleeve spaced from and surrounding said tubular member, means securing said sleeve to said shaft between the impeller and tubular member, means journaling said shaft on the end portion of said tubular member adjacent to said impeller, and a support for the other end portion of said tubular member, journaling said sleeve. ~ . 5. A **pump** and drive shaft assembly comprising a vertical shaft, a **pump** impeller fast upon the lower end portion of said shaft. a. **pump** casing receiving said impeller, a cylindrical support for the casing surrounding said shaft, a sleeve carried by the shaft and spaced therefrom within said cylindrical support, a member carrying said cylindrical support and journaling said sleeve, a ring exteriorly carried by said sleeve obstructing the upward flow of water thereupon, said support having an annular enlargement in the **horizontal** plane of said ring formed with an outlet in its outer portion. 6. In a device of the character described, the combination with a centrifugal **pump** comprising an impeller and its casing, of a substantially vertical drive shaft, the lower end of which carries said impeller, a sleeve coaxial with said shaft and spaced therefrom, means securing the lower end of said sleeve upon said shaft adjacent to said impeller, a member journaling the upper end of said sleeve, and means supporting the **pump** casing;» upon said member. In testimony whereof I sign this specification. ,

Probable Assignee: BROWN HOWARD T

Earliest Publication Date: 19310331