

1) Family number: 56650999 (US2015330391 AA)

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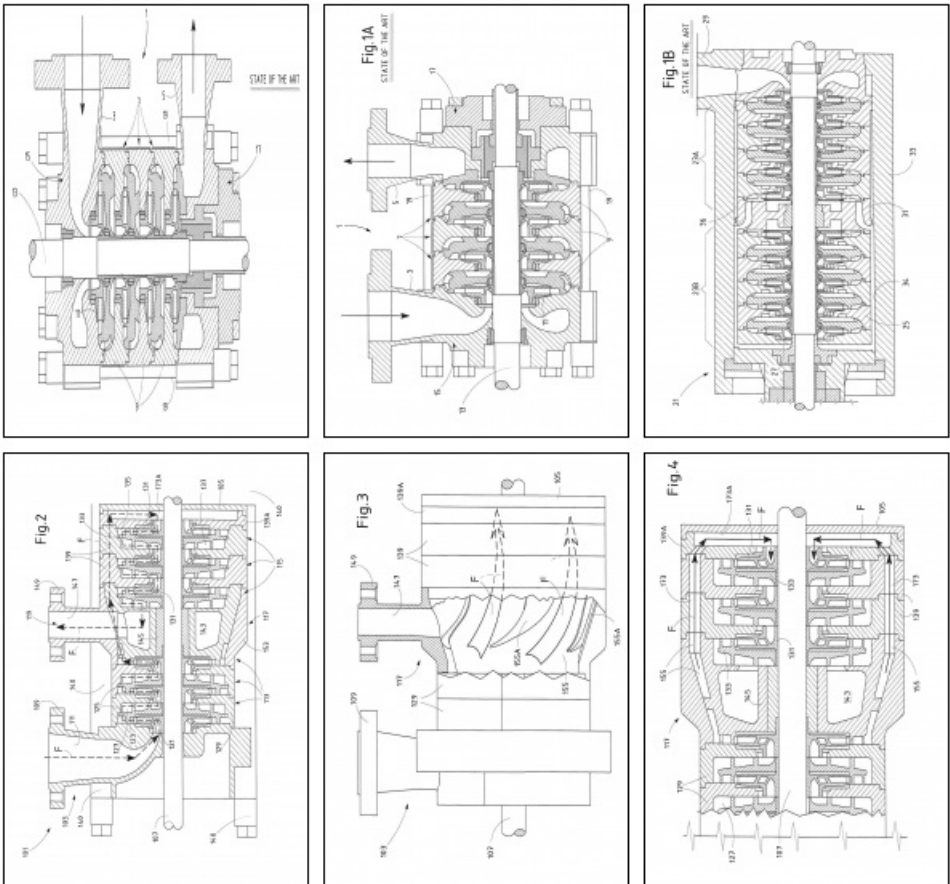
Title:
BACK-TO-BACK CENTRIFUGAL PUMP

Abstract:
Source: US2015330391 AA A back-to-back centrifugal pump comprising a pump inlet, a pump outlet, a pump shaft, a set of first stages, and a set of second stages in a back-to-back arrangement. Between the two sets of stages an intermediate crossover module is arranged. The first and second sets of stages comprise respective first outer diaphragms and second outer diaphragms. The outer diaphragms and the intermediate crossover module are stacked together and form a pump casing. The intermediate crossover module forms at least one axial transfer channel between the two sets of stages, and a fluid connection between the set of second stages and the pump outlet. The second diaphragms comprise each at least one peripherally arranged through aperture. The through apertures are aligned to form at least one passageway, which fluidly connects the axial transfer channel with a most upstream one of the impellers of the second set of stages.

Probable Assignee:
NUOVO PIGNONE SRL

Assignee(s):(std):
NUOVO PIGNONE SRL

Assignee(s):
BERGAMINI LORENZO ; MILONE FABRIZIO ; RIPA DONATO ANTONIO



2 more images available

2) Family number: 59337588 (US2015143822 AA)

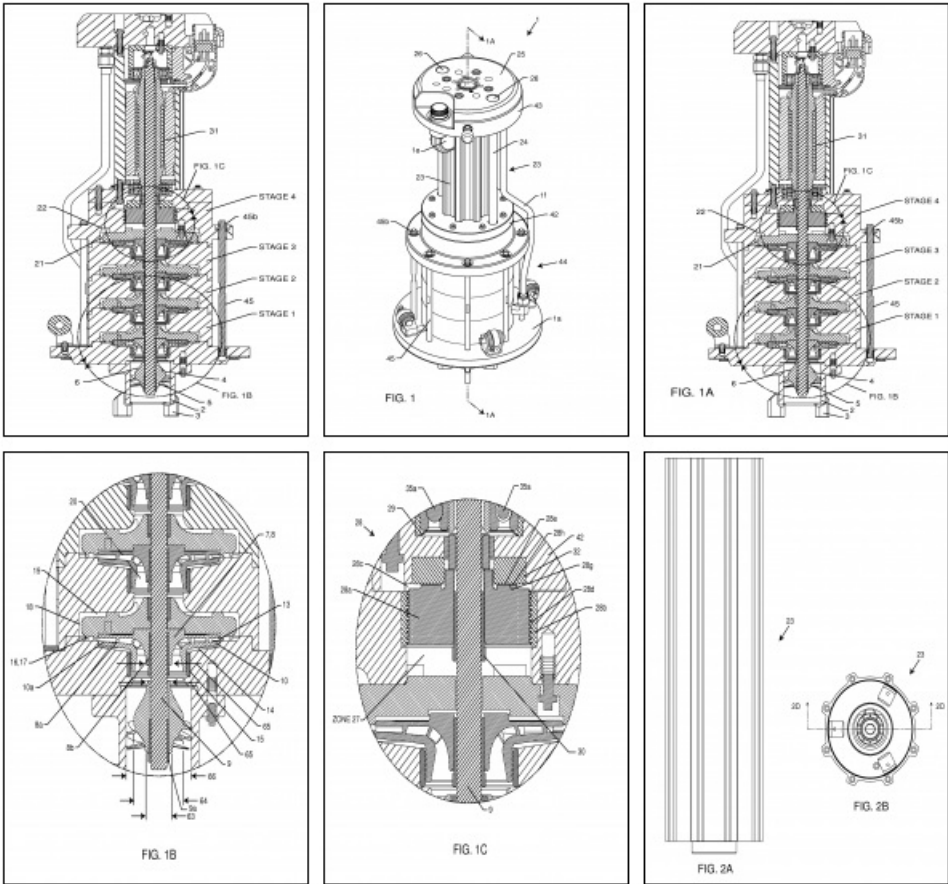
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Title:
CRYOGENIC SUBMERGED PUMP FOR LNG, LIGHT HYDROCARBON AND OTHER ELECTRICALLY NON-CONDUCTING AND NON-CORROSIVE FLUIDS

Abstract:
Source: US2015143822 AA A cryogenic submerged multi-stage pump assembly includes a vertically oriented pump shaft. A permanent magnet electrical motor includes a rotor attached to the pump shaft and a stator disposed about the rotor. A first-stage impeller assembly includes a first impeller attached to the pump shaft, the first impeller configured to move a cryogenic fluid from a first impeller inlet to a first impeller outlet when the pump shaft is rotated by the electric motor. A second-stage impeller assembly includes a second impeller attached to the pump shaft, the second impeller configured to move the cryogenic fluid from a first impeller housing to a second impeller inlet and then to a second impeller outlet when the pump shaft is rotated by the electric motor. The first and a second impeller housing are disposed about the first and second impellers and configured to channel the cryogenic fluid.

Probable Assignee:
ACD LLC

Assignee(s):(std):
ACD LLC ; BOTROUS MINA ;
CHALMERS DENNIS W ; DOKHALE
MUGDHA ; GEIPEL MARK ; RUIZ
ELIDIO



6 more images available

3) Family number: 62127914 (US2016108922 AA)

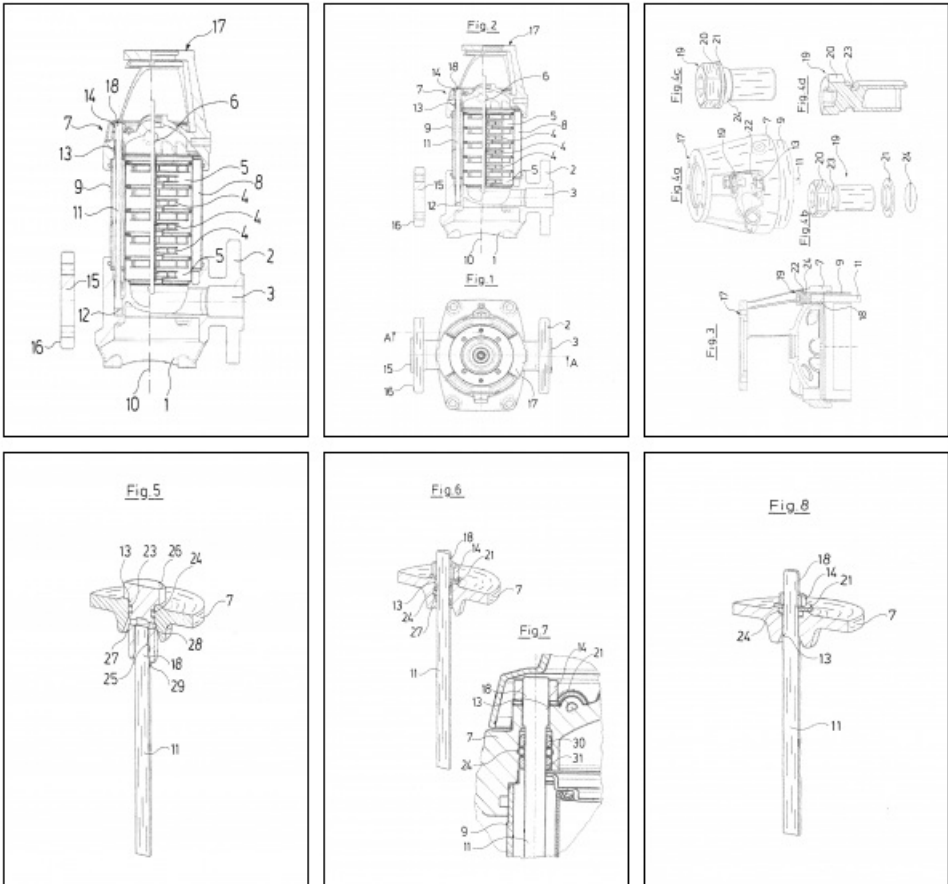
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Title:
MULTI-STAGE CENTRIFUGAL PUMP

Abstract:
Source: US2016108922 AA A multistage centrifugal pump includes a foot part (1) and a head part (7), between which several pump stages are arranged. Each of the pump stages includes an impeller (4) and a housing (5) surrounding the impeller (4). The housings (5) are arranged over one another. The housings (5) together with an outer casing (9) form an annular channel (8). The housings (5) together with an outer casing (9) are clamped via clamping bolts (11) which are fastened on the head part (7) and the foot part (1). The clamping bolts (11) are arranged within the annular channel (8).

Probable Assignee:
GRUNDFOS HOLDING AS

Assignee(s):(std):
GRUNDFOS HOLDING AS



3 more images available

4) Family number: 10220030 (US5888053 A)

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Title:

Pump having first and second outer casing members

Abstract:

Source: US5888053 A A pump having an improved fluid passage has an inner casing which houses at least one impeller and an outer casing which houses the inner casing. The pump also has a communicating pipe disposed outside of the outer casing for guiding a main flow of a fluid being handled from a space defined in the outer casing into another space defined in the outer casing.

Probable Assignee:

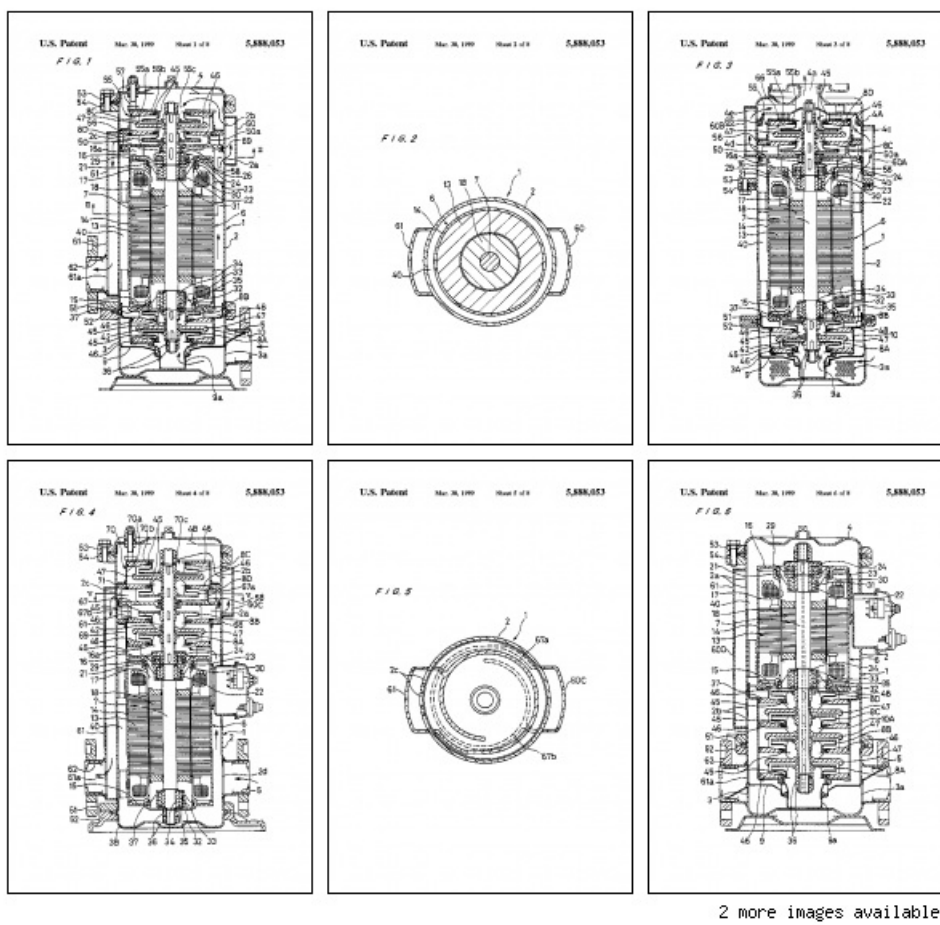
EBARA CORP

Assignee(s):(std):

EBARA CORP

Assignee(s):

EBARA CORP TOKIO TOKYO



2 more images available

5) Family number: 22659501 (DE2614163 B1)

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Title:

MULTI-STAGE CENTRIFUGAL BOILER FEED PUMP - HAS CASING IN THREE SECTIONS HELD TOGETHER BY FLANGES AND STUDS

Abstract:

Source: DE2614163 B1 A boiler feed pump has a hollow pot shaped discharge end casing (1) to which the discharge flange (2) can be welded. The several stages are formed by casing rings (11 to 14) which have suitable flanges pressing against each other with sealing rings (18, 21, 22, 25) between them. The stages are surrounded by an intermediate outer casing piece (3) which has a flange (15) pressing against the first stage ring (11). It is held to the discharge end casing piece (1) by studs (7) running through it and screwing into threaded holes in the inner flange (6) of the end piece. The suction end casing piece (4) is attached to the first stage ring by screws. The pump can be readily dismantled in a short space while the discharge end remains connected to the piping.

Probable Assignee:

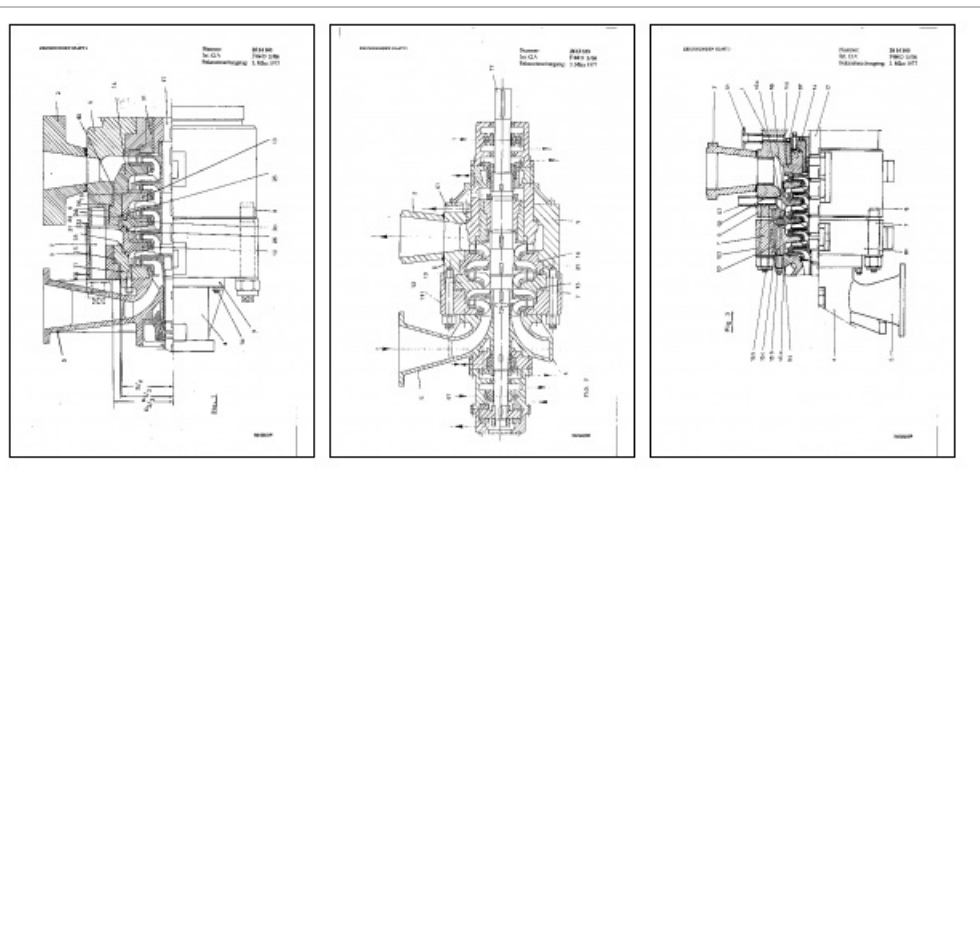
BALCKE DUERR AG

Assignee(s):(std):

BALCKE DUERR 4030 RATINGEN AG
; BALCKE DUERR AG

Assignee(s):

BALCKE-DUERR AG 4030 RATINGEN



6) Family number: 20867124 (GB911016 A)

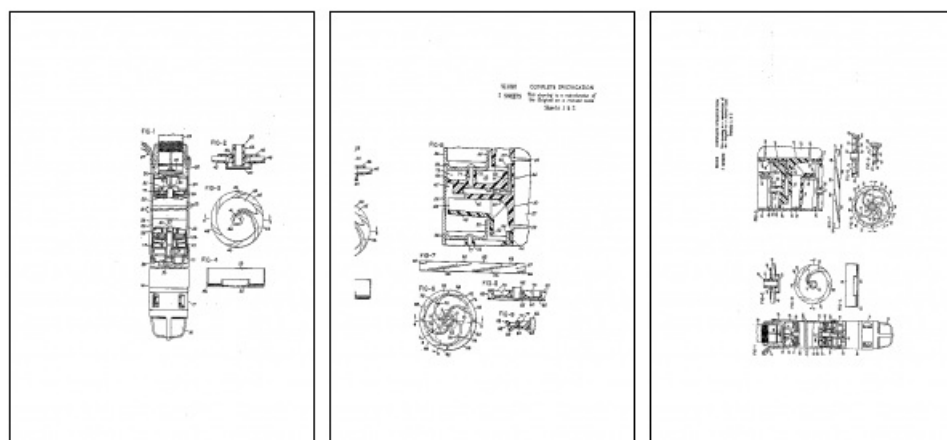
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Title:

Improvements in or relating to centrifugal pumps

Abstract:

Source: GB911016 A 911,016. Centrifugal pumps. TAIT MANUFACTURING CO. July 5, 1960, No. 23489/60. Class 110 (1). The submersible multi-stage centrifugal pump shown in Fig. 1, comprises annular cup-like casings 22, each nested into another at a shoulder 56, Fig. 5, and clamped between end caps 20, 21 by means of tie bolts 23. Each casing 22, except the topmost one, contains an impeller 25 and a diffuser 26, the latter being riveted to the next casing 22 at thickened portions 75, Figs. 5 and 6, of the diffuser vanes 70. Each impeller hub is journaled in a bearing sleeve 62 carried by the associated diffuser. A flange 55 surrounds the eye 50 of each impeller. The outer diameter of the back shroud 42 of each impeller is less than that of the front shroud 45 so as to balance the thrusts on the shrouds. The impellers are splined to the driving shaft 27, downward thrust being transmitted by circlips 39 to the driving shaft and thence to the motor bearings and upward thrust being taken by a flange 63 on each bearing sleeve 62. The liquid flow from each impeller is guided towards the diffuser vanes 70 by four helical fins 66 on the rim of the diffuser, each fin ending in a protuberance 68 seating against the underside of the next casing 22. The impellers may be of plastics material such as nylon and the diffusers may be of plastics material or of a metal such as brass. A check valve 35 is



provided.

Probable Assignee:

TAIT MFG CO THE

Assignee(s):(std):

TAIT MFG CO THE

Assignee(s):

TAIT MFG CO ; THE TAIT
MANUFACTURING COMPANY

7) Family number: 65264031 (US2018363659 AA)

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Title:

MULTI-STAGE CENTRIFUGAL PUMP
HAVING TIE RODS FORMED FROM
SHEET METAL

Abstract:

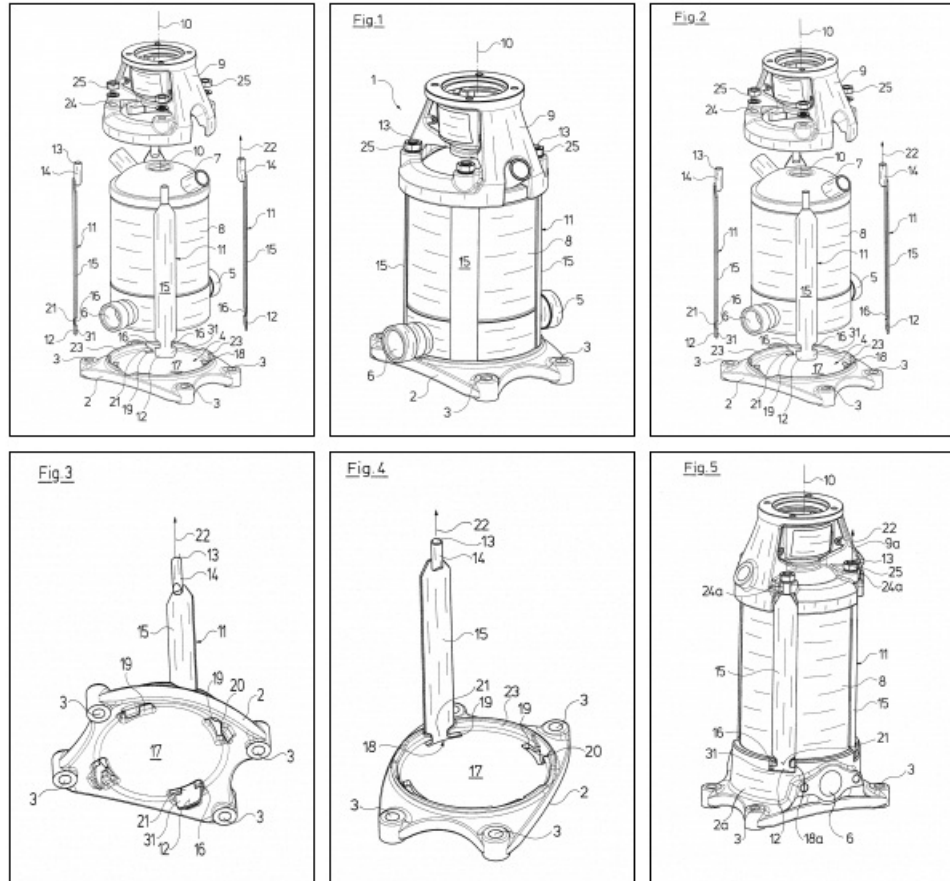
Source: US2018363659 AA A
multistage centrifugal pump with a
foot part (2) and with a head part
(9), between which pump stages are
integrated. The head part (9) and
the foot part (2) are connected via
tie-rods (11) which with one end are
fastened on the head part (9) and
with the other end are fastened on
the foot part (2). The tie-rods (11)
at one end comprise a thread (14),
with which they are tightened on the
head part (9). The tie-rods (11) are
formed from sheet metal and at the
other end comprise a recess (16),
with which recess they are positively
fixed on the foot part (2), at least
one the tensile direction 22

Probable Assignee:

GRUNDFOS HOLDING AS

Assignee(s):(std):

GRUNDFOS HOLDING AS



8 more images available

8) Family number: 41698417 (US2008085185 AA)

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Title:

MULTISTAGE PUMP ASSEMBLY

Abstract:

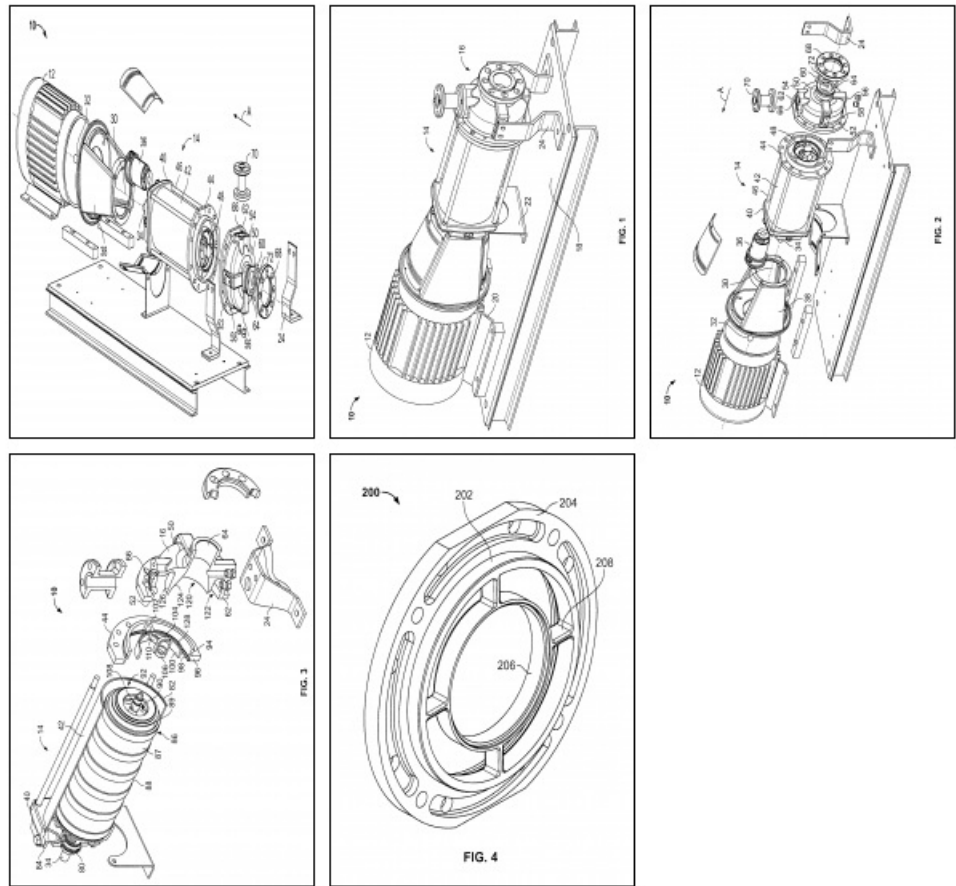
Source: US2008085185 AA A
modular multistage pump assembly
includes a volute having a suction
side and a pressure side, a pump
stack having at least one stage, and
a modular flange coupled to each of
the volute and the pump stack.

Probable Assignee:

GRUNDFOS PUMPS CORP

Assignee(s):(std):

AMDISEN SVEND ; GRUNDFOS PUMPS
CORP ; GRUNDFOS MAN A S ;
GRUNDFOS MANAGEMENT AS ;
GRUNDFOS PUMPS CORP ; HAACK
RYAN ; TALLEY JOSHUA ; TOWSLEY
GREG



9) Family number: 1521814 (US4098558 A)

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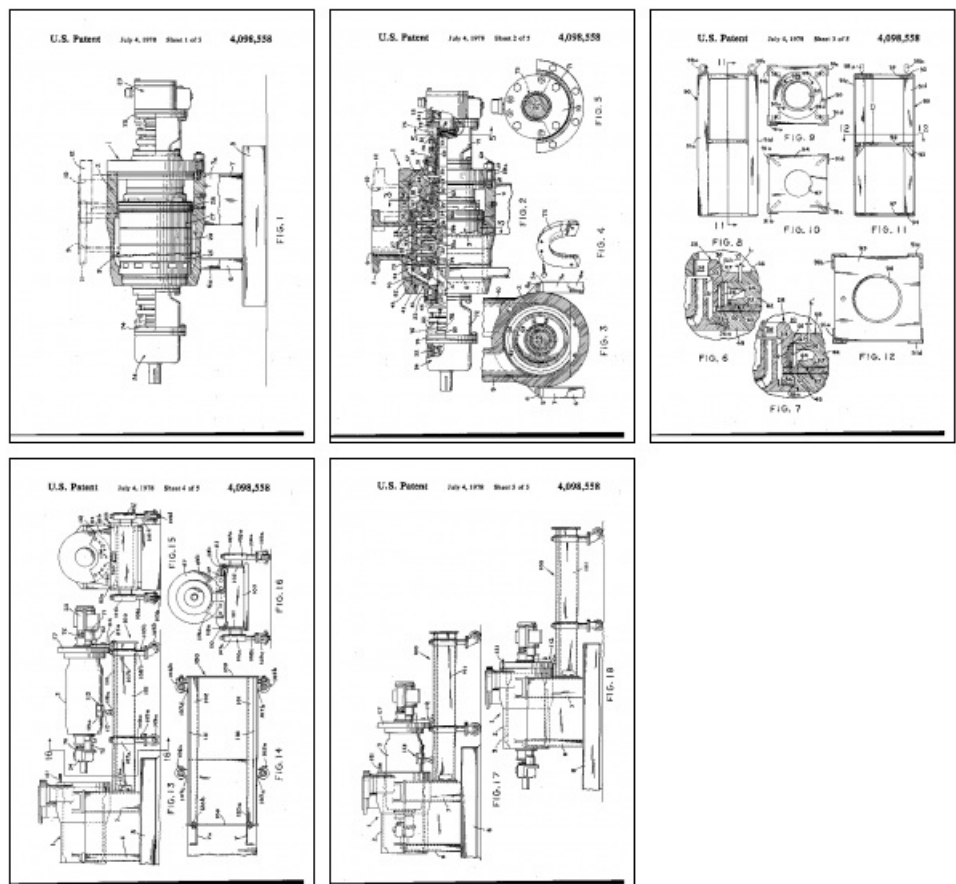
Title:
PREASSEMBLED UNIT OR
CARTRIDGE FOR MULTI-STAGE
BARREL TYPE CENTRIFUGAL PUMPS

Abstract:
Source: US4098558 A A
preassembled unit or inner cartridge
for a multi-stage barrel type
centrifugal pump including bearings,
seals, balancing device, impellers
and diffusers is aligned, balanced
and pressed together into assembled
position by a resilient means for
stressing the parts against a pair of
spaced handling clamps at opposite
ends of the preassembled unit which
permits the shaft to act as an
elongated tie bolt to hold the
preassembled unit or cartridge so
that it can be installed or removed
easily from the fixed outer casing of
the multi-stage barrel type
centrifugal pump.

Probable Assignee:
WORTHINGTON PUMP

Assignee(s):(std):
WORTHINGTON PUMP ;
WORTHINGTON PUMP INT

Assignee(s):
BUSH AUSTIN R ; EDISON INT ;
EDISON INTERNATIONAL INC ;
FERRARESE FRANK L ; INGERSOLL
DRESSER PUMP CO ; KRUTZSCH
WILLIAM C ; STUDEBAKER
WORTHINGTON INC ; WAAJINTON
PANPU INTERN INC ;
WORTHINGTON PUMP INC ;
WORTHINGTON PUMP INC
MOUNTAINSIDE N J US



Title:
MULTI-STAGE PUMP

Abstract:

Source: US3963371 A The segmented casing has a plurality of successive stage casing rings, a transfer plate intermediate each adjacent pair of casing rings, a suction end casing section, and a discharge end casing section. A shaft extends axially through the casing, and is supported and sealed at its ends by demountable bearing and seal means. Each casing ring encloses a complete stage containing an impeller which is spring biased into engagement with a locating collar secured to the shaft, and a pair of replaceable liners which are arranged at the opposite sides of each impeller. Each casing ring, impeller, set of liners, locating collar, and spring means, together comprises a module which functions as one stage of the pump. A pump is comprised of two or more modules which are connected internally by a shaft and externally by draw bolts, and which are contained by the suction and discharge end casing sections. Suction and discharge connections are demountably secured to the casing in any one of several rotative positions.

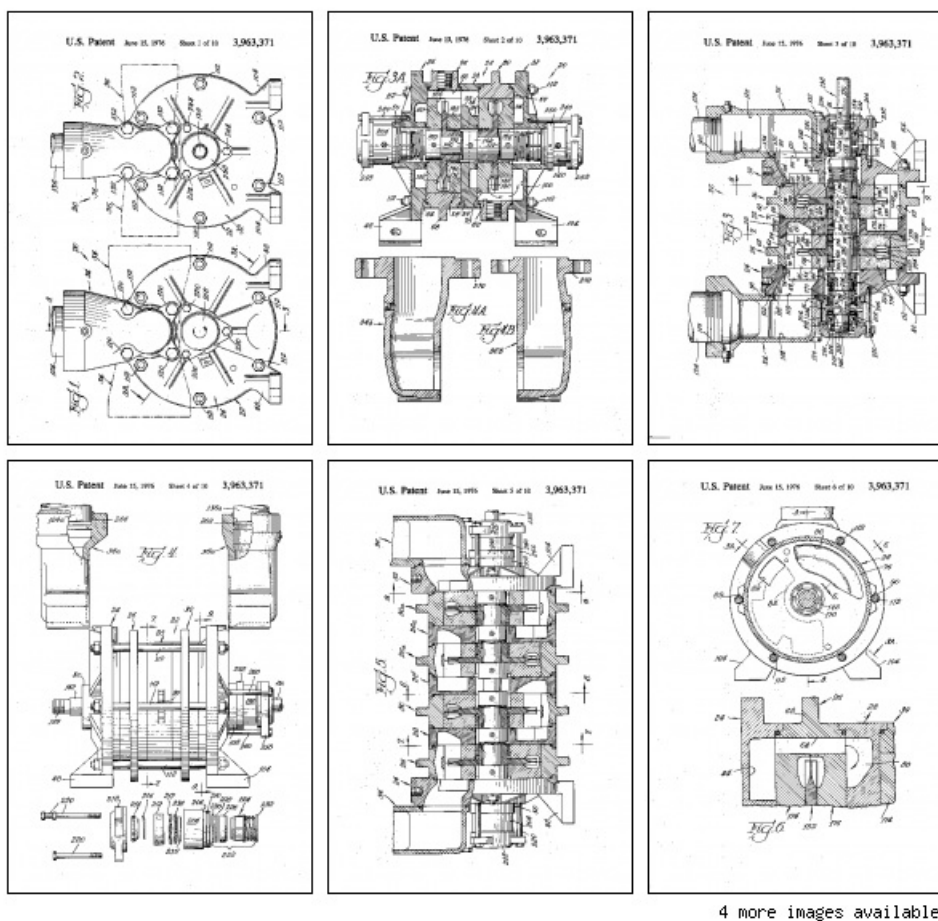
Probable Assignee:
ROTH CO ROY E

Assignee(s):(std):

ROTH CO R ; ROTH CO ROY E ;
ROTH R E CO ; ROY E RITH CO ;
ROY E RITH COMPANY

Assignee(s):

ROI II ROSU CO ; ROTH COMPANY
ROY E ; ROTH ROY E CO ; ROTH
ROY E COMPANY ; ROY E ROTH CO ;
ROY E ROTH CO ROCK ISLAND ILL
US ; ROY E ROTH CO TE ROCK
ISLAND ILLINOIS VERSTVAM ; ROY
E ROTH COMPANY ; ROY E ROTH
COMPANY TE ROCK ISLAND
ILLINOIS VER ST ; ROY E ROTH
COMPANY TE ROCK ISLAND
ILLINOIS VER ST V AM ;
SIEGHARTNER LEONARD J



4 more images available

Title:
NON-WELDED SUCTION CHAMBER
FOR SURFACE PUMPING SYSTEMS

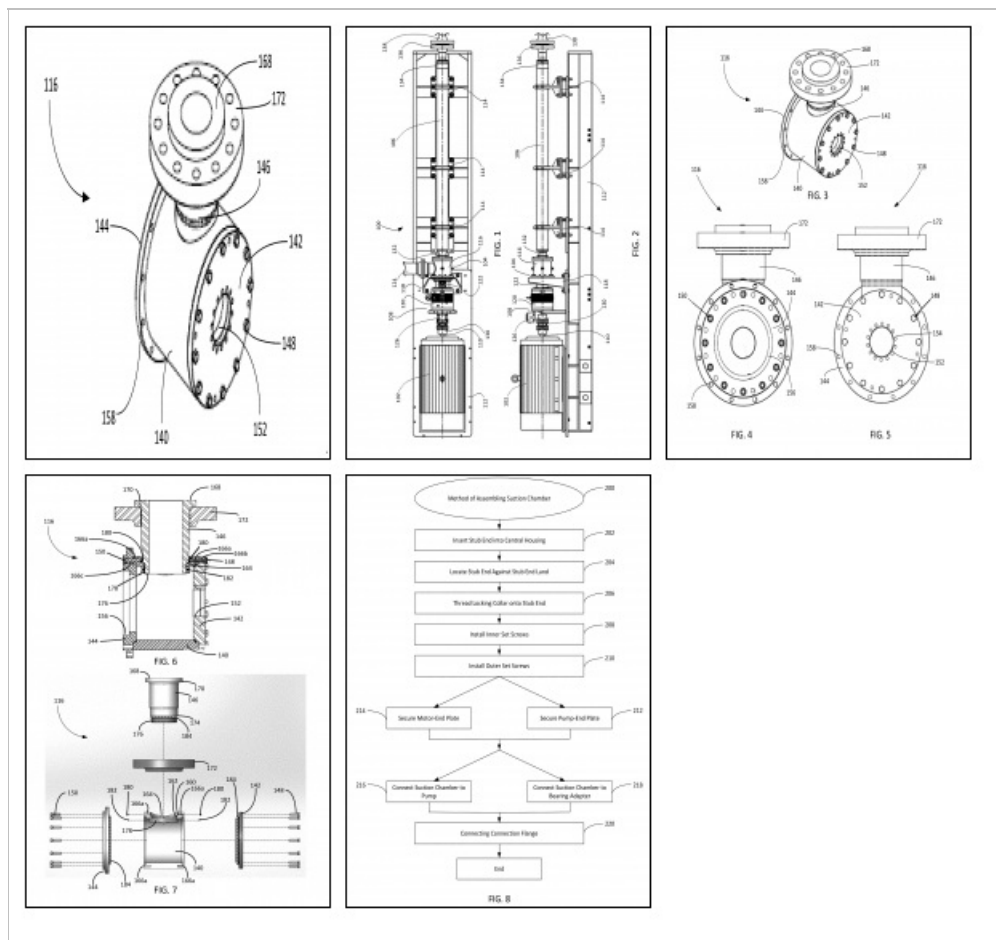
Abstract:

Source: US2017184123 AA A suction chamber for use in a surface pumping system includes a central housing that is substantially cylindrical and has a motor end and a pump end opposite the motor end. The suction chamber includes a motor-end plate bolted to motor end of the central housing and a pump-end plate bolted to the pump end of the central housing. The suction chamber also includes an inlet branch connected to the central housing. A method for assembling a non-welded suction chamber is also disclosed.

Probable Assignee:
GE OIL AND GAS ESP INC

Assignee(s):(std):

GE OIL AND GAS ESP INC



12) Family number: 59000512 (US2015104337 AA)

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Title: MULTI-STAGE HIGH PRESSURE FLANGED PUMP ASSEMBLY

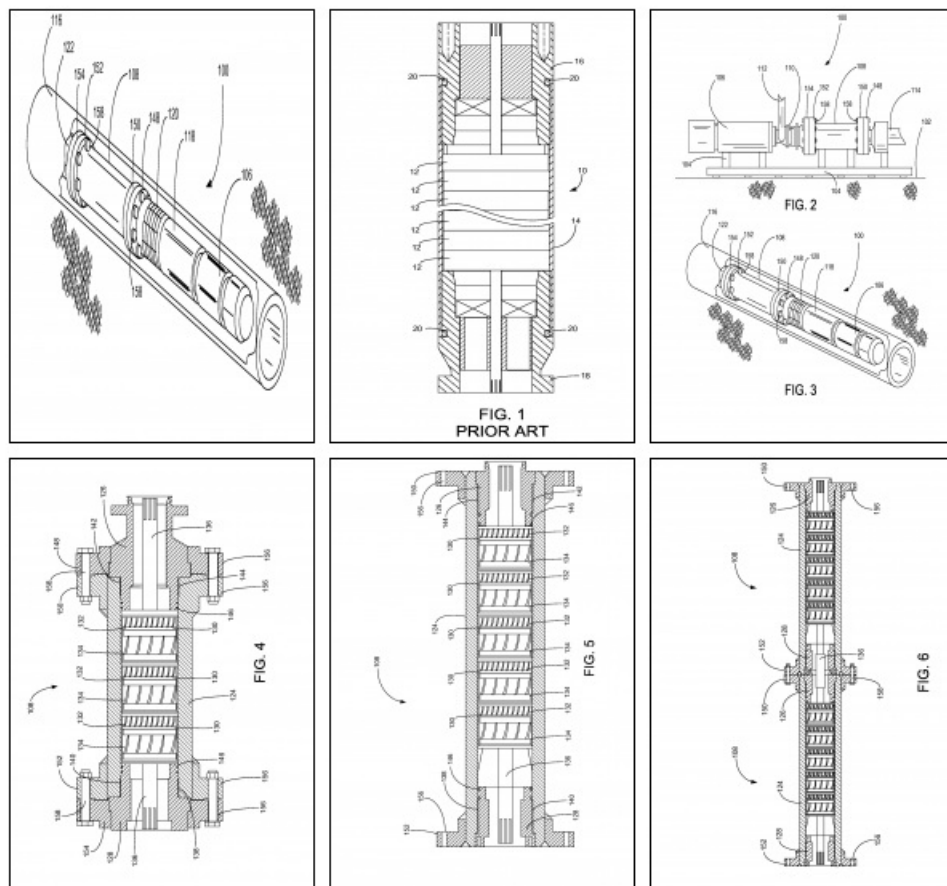
Abstract:

Source: US2015104337 AA A pump assembly for use within a high pressure pumping system includes housing, a head and a base. The housing contains at least one centrifugal pump stage. The head and base are attached to the housing with corresponding internal threaded connections. The head and base are further retained to the housing with corresponding external flanged connections. The external flanged connections provide redundant connections that reduce the risk of separation between the housing and the head and base.

Probable Assignee:
GE OIL AND GAS ESP INC

Assignee(s):(std):
GE OIL AND GAS ESP INC

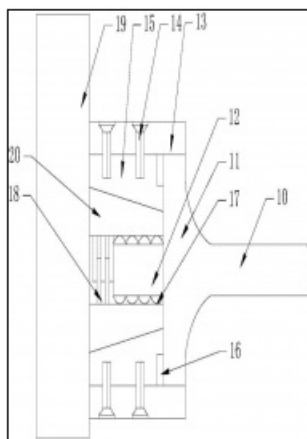
Assignee(s):
GAHLOT VISHAL ; JAMES MARK ;
LOVELESS COLBY LANE ; SCHOLEN
MATTHEW ALLEN ; WANG
CHENGBAO



Title:
MULTISTAGE PUMP WITH
SHOCKPROOF STRUCTURE

Abstract:

Source: CN108223385 A The invention provides a multistage pump with a shockproof structure. Four main support rods with perforating holes in two ends, support beams arranged at one ends of the main support rods and tightening rings arranged at the other ends of the main support rods are fastened to the periphery of each pump body. The support beams are connected with flange plates through detachable connecting structures. Each detachable connecting structure comprises two clamping plates arranged at the end of the corresponding support beam, a bolt plate, an elastic cushion block and pressing bolts. At least one flange connecting opening is formed in the connecting positions of the flange plates. Each flange connecting opening comprises an annular convex wall. The elastic cushion blocks are arranged around the outer sides of the corresponding annular convex walls in an extruded and covering manner. The bolt plates extend into the inner sides of the flange connecting openings. Each support beam is connected with the corresponding two clamping plates through a buffer connecting plate. Every two clamping plates are clamped to the outer side of the corresponding elastic cushion block and fixed through at least four pressing bolts. By the adoption of the multistage pump, the connection of the multiple pump bodies is more stable, the vibration phenomenon is not easy to occur, and the resonance problem of the multistage pump is greatly reduced.



Probable Assignee:
TIANJIN YANLI TECH CO LTD

Assignee(s):(std):
TIANJIN YANLI TECH CO LTD

Assignee(s):
COLORFUL TIANJIN SCIENCE AND
TECHNOLOGY CO LTD ; TIANJIN
YANLI TECHNOLOGY CO

Title:

Head ASSEMBLY FOR THE HOUSING
OF A MULTISTAGE CENTRIFUGAL
PUMP (Machine translation)

Abstract:

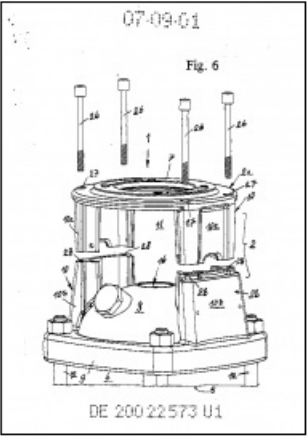
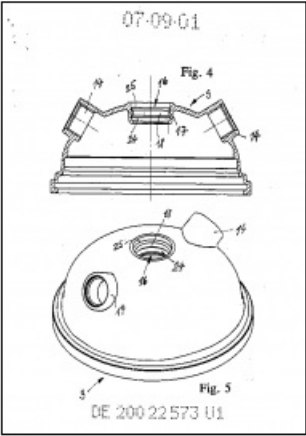
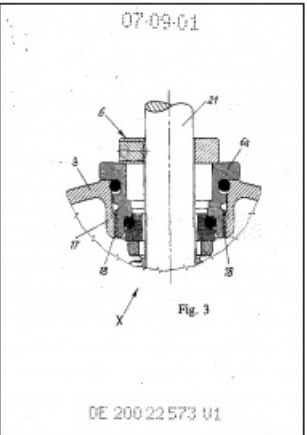
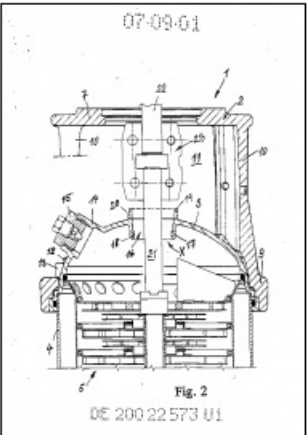
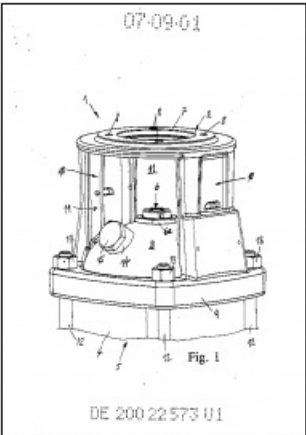
Source: DE20022573 U1 Centrifugal pump (Claim 1) remaining housings of the centrifugal pump and an engine lantern, whereby the Motorlatere at their is trained, the Endwand at their outer edge range spreading end as the connection with the remaining housings of the centrifugal pump and exhibits at their end with distance a facing other end a mounting flange for a driving motor of the centrifugal pump, by the fact characterized that the Endwand is of the Motorlateme (2) except, form-stable loose piece (3), plant-free trained in their spreading outer edge range, and that the

central pump wave passage (16) of the loose piece with from mounting base (17), accessible outside of the loose piece, for the admission of a pump wave seal (6) provides is 2.

Probable Assignee:
GRUNDFOS AS

Assignee(s):(std):
GRUNDFOS AS ; GRUNDFOS
BJERRINGBRO AS

Assignee(s):
GRUNDFOS A S BJERRINGBRO



15) Family number: 22538032 (US2365310 A)

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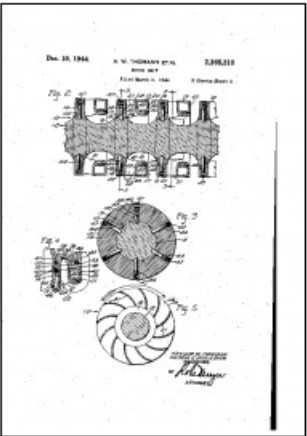
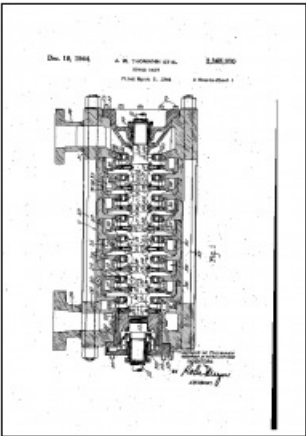
Title:
ROTOR UNIT

Abstract:
Source: US2365310 A 1. A rotor unit comprising a shaft, impellers mounted on said shaft and having wearing surfaces of diameters at least; equal to the outside diameters of their respective impellers, and fastening means fixedly securing the individual impellers to said shaft, said fastening means extending through the outer periphery of the walls of the impellers. 2'.

Probable Assignee:
WORTHINGTON PUMP AND MACH
CORP

Assignee(s):(std):
WORTHINGTON PUMP AND MACH
CORP

Assignee(s):
WORTHINGTON PUMP AND
MACHINERY CORP



Title:
MULTIPLE UNIT DOUBLE CASING
PUMP

Abstract:

Source: US2216315 A 1. In a multi-stage centrifugal pump, a supporting means having an inlet and an outlet therein, a substantially hydraulically balanced multi-stage centrifugal pump unit having an axially split casing mounted on said support with an inlet in one end thereof in communication with the inlet in said support and having an outlet in the opposite end thereof, a second substantially hydraulically balanced multi-stage centrifugal pump unit having an axially split casing secured to and supported by the discharge end of said first pump unit with an inlet in one end thereof communicating with the outlet from said first pump unit, an outer casing secured to said supporting means and enclosing said pump units in spaced relation thereto providing a fluid pressure chamber between said pump units and the outer casing in communication with the outlet in said supporting means, and a discharge opening E, 2,216,316 _ 3 from said second pump unit communicating with said fluid pressure chamber.

Probable Assignee:

BYRON JACKSON CO

Assignee(s):(std):

BYRON JACKSON CO

