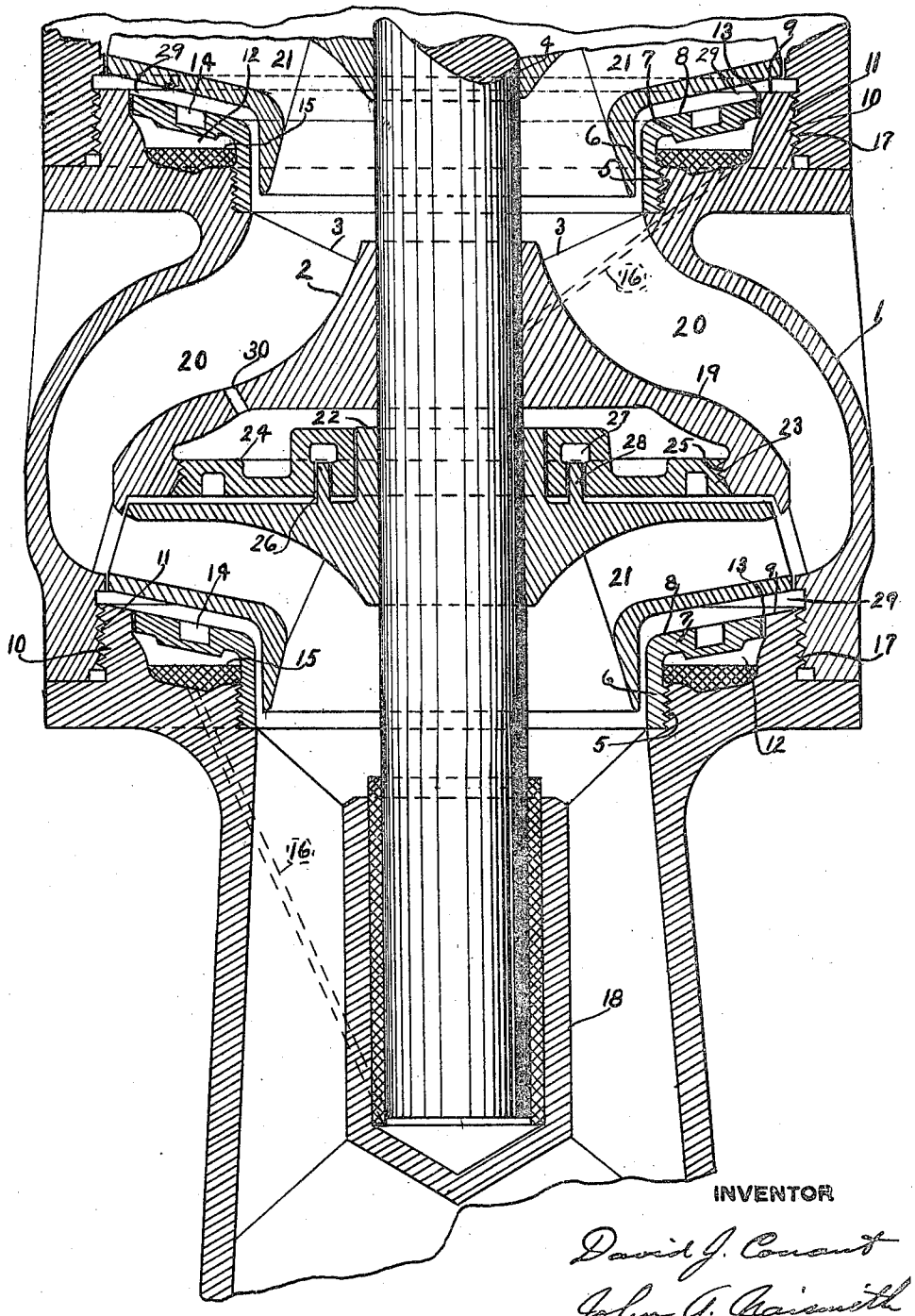
July 8, 1924. 1,500,607

D. J. CONANT

PUMP

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PUMP.

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To all whom it may concern:

Be it known that I, DAVID J. CONANT, a citizen of the United States, and resident of San Jose, in the county of Santa Clara and State of California, have invented a certain new and useful Improvement in Pumps, of which the following is a specification.

My invention relates particularly to deep well centrifugal pumps.

It is the object of my invention to provide a bowl in which those parts subjected to the greatest amount of wear may be readily removed and quickly and easily replaced with new parts.

It is another object to provide a bowl and runner arrangement wherein the one engages the other in such a manner as to prevent the water pressure occasioned by the action of the runner from forcing sand and other erosive materials into the bearing of the bowl.

It is still a further object of my invention to provide a means whereby the water pressure created by the action of the runner is utilized to force water through a suitable filter to a shaft bearing.

Other objects and advantages of my invention will appear in the following description and in the drawing forming a part of this application.

The figure is a vertical cross-section through a portion of a pump embodying my invention.

Referring more particularly to the drawing 1 indicates a pump bowl supporting a bearing 2 by means of diffusion vanes 3, and 4 indicates a driving shaft operating in bearing 2.

The discharge end of bowl 1 is threaded as at 5 to engage a threaded neck portion 6 of a collar 7, the upper surface 8 of collar 7 flaring upwardly and outwardly as shown and lying flush with the upper edge 9 of flange 10 upstanding on bowl 1. The outer surface of flange 10 is threaded as at 11 to engage the next bowl to be arranged thereon. That portion of bowl 1 lying between threaded portions 5 and 11 is formed to provide a chamber 12 into which water may enter through passage 13 between collar 7 and flange 10. The holes 14 in collar 7 are for the purpose of inserting a suitable tool for securing collar 7 in place or for removing the same as the case may be.

A suitable filtering material may be arranged in chamber 12 as indicated at 15, and a passage 16 formed in the bowl in such a manner as to connect chamber 12 and the bearing 2 in said bowl.

The receiving end of the bowl 1 is provided with an internally threaded portion as at 17 adapted to engage the threaded portion 11 of the next lower bowl. The above description refers also to the step bearing 18 and parts connected thereto.

The bearing member 2 is formed to provide an inner wall 19 for passages 20 and is formed integrally with bowl 1. The actual bearing surface engaging shaft 4, however, is short and the neck of runner 21 mounted on shaft 4 within bowl 1 extends upwardly as at 22 to a point adjacent bearing 2 and is encompassed by wall 19. The lower edge of wall 19 is interiorly threaded as at 23 to engage a removable plate 24.

Plate 24 is threaded as at 25 to engage threaded portion 23 and loosely engages neck portion 22 of runner 21 as shown. In the lower surface of plate 24 is formed an annular groove 26 communicating with an annular chamber 27. On the upper surface of runner 21 is an annular upstanding boss 28 engaging groove 26.

In operation the several parts cooperate in the following manner.

The centrifugal force generated by the action of runner 21 creates a relatively high pressure at 29 and a correspondingly high pressure in chamber 12 through passage 13. Since the pressure in bearing 2, below runner 21, is less than the pressure at the discharge end of runner 21 and in chamber 12 it results that when the pump is in operation there is continuous movement of filtered water from chamber 12 to bearing 2 and thence out into the bowl again. This action effectually prevents the entrance of erosive material into bearing 2 and at the same time lubricates the same.

In the usual form of bowl construction when surfaces thereof engaging the runner therein become worn the only remedy is to discard the entire bowl and replace it with a new one. In the construction disclosed it is merely necessary to unscrew and remove either collar 7 or plate 24, or both as the case may be and screw in a new element, a process requiring but a few moments of time and involving but little loss of material.

At 30 is shown a conduit connecting passage 20 with the interior of bearing 2 and between the same and plate 24. By pro-

viding this passage the water is allowed to flow directly from passage 20 to chamber 27 instead of between bearing 2 and shaft 4 and thereby preventing the introduction of erosive material into said bearing.

It is to be understood, of course, that while I have herein shown and described one particular embodiment of my invention, that changes in form, proportion, construction and method of operation may be made within the scope of the appended claims.

I claim:—

1. A pump bowl having a discharge opening, an upstanding flange arranged thereon and spaced a distance from said opening, and a neck portion removably mounted in said discharge opening and flaring outwardly to a point adjacent said flange to form a pressure chamber.

2. A pump bowl having a discharge opening, an upstanding flange arranged thereon and spaced a distance from said opening, and a neck portion removably mounted in said discharge opening and flaring outwardly to a point adjacent said flange to form a pressure chamber, and a filtering material arranged in said chamber.

3. A pump bowl having a bearing arranged therein, a neck portion removably inserted therein, a pressure chamber arranged between said neck portion and bowl, and a conduit extending from said chamber to said bearing.

4. In combination, a liquid conducting element, a step bearing for a revoluble shaft arranged therein, a neck member removably inserted in said element, a pressure chamber arranged between said neck member and said element, and a conduit extending from said chamber to said step bearing.

5. A pump bowl having a bearing arranged therein, a neck portion removably inserted therein, a pressure chamber arranged between said neck portion and bowl, a filtering material arranged in said chamber, and a conduit extending from said chamber to said bearing.

DAVID J. CONANT.