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P. HOEKSTRA

2,808,780

ROTARY PUMP

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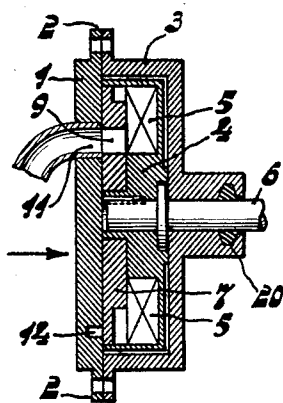


Fig. 1.

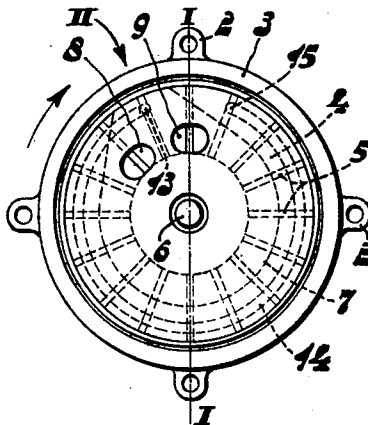


Fig. 2.

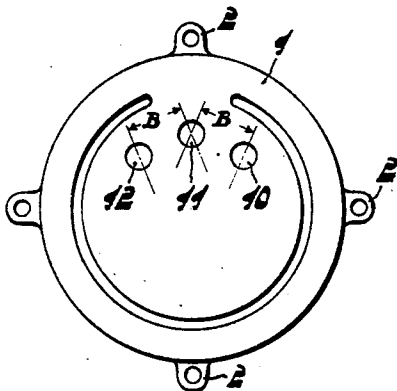


Fig. 3.

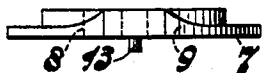


Fig. 4.

INVENTOR

PIET HOEKSTRA

BY

Fred M. Vogel

AGENT

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2,808,780

ROTARY PUMP

Piet Hoekstra, Eindhoven, Netherlands, assignor, by mesne assignments, to North American Phillips Company, Inc., New York, N. Y., a corporation of Delaware

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2 Claims. (Cl. 103—3)

Rotary pumps are known which comprise a fan-shaped member and whose housing is externally provided with a plurality of connections for the medium to be pumped. Usually one of these connections serves as a suction opening and delivery pipes may be secured to the other connections. These pipes may comprise cocks enabling different pipes to be connected arbitrarily. Such a construction is comparatively expensive and bulky and requires a good deal of maintenance. In the case of small pumps, the assemblage of mouthpieces and cocks is often bulkier than the pump itself, which is particularly disadvantageous if the pump forms part of other apparatus and is to be housed in a small space such as, for example, a water pump for cooling a super high pressure lamp in sound film installations, where the pump is preferably housed in the projector base and the water alternately cools a number of lamps.

The present invention relates to pumps of the said type and is characterised by a change-over member arranged concentrically with the axis of the fan-shaped member and incorporated in the pump housing, said member each time permitting two arbitrary connections to be established with the interior of the pump. This construction avoids the disadvantage inherent in conventional constructions, where rather bulky change-over members are provided outside the pump housing and which consequently occupy much space whereas the housing for a pump according to the invention need be only slightly larger than hitherto known constructions. Moreover, its control is much simpler and any leakages occur in the pump housing itself, thus preventing the cooling liquid from gaining access to other parts of the apparatus.

In one embodiment of the invention the change-over member is controllable from without. This may be effected by hand. Alternatively, it may, for example, be effected electrically. In a further embodiment of the invention the fan-shaped member preferably comprises radial blades and the change-over member is controlled by reversing the sense of rotation of the pump. This is no doubt the simplest construction for alternately establishing other connections with the pump interior.

In a further embodiment of the invention the change-over member comprises a disc-shaped member partly engaging the pump fan at one side and at the other side completely engaging the portion of the pump housing comprising the connections, said member being provided with two axial apertures extending co-axially with every two connections, while all connections are so provided as to be equally spaced from the fan shaft in the pump housing, the distance of the centers of each pair of juxtaposed connections adapted to co-act during operation of the pump corresponding to the distance of the centers of each other pair of openings adapted to co-act.

In a further form of the invention, the change-over member comprises a stop, and the pump housing is provided with a corresponding concentric slot in which the stop is movable.

In order that the invention may be readily carried into effect, it will now be described with reference to the accompanying drawing, given by way of example, and in which

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Fig. 1 is a cross-section of a rotary pump on the line I—I of Fig. 2.

Fig. 2 is an elevation, viewed in the direction of the arrow, of the pump shown in Fig. 1 but with its lid taken off.

Fig. 3 is an elevation of the inner side of the pump lid.

Fig. 4 is a plan view of the change-over member, viewed in the direction of the arrow II in Fig. 2.

In the drawing, the reference numeral 1 denotes a pump lid secured to a pump housing 3 by means of four ears 2. In this pump housing, a rotary fan-shaped member 4 comprises radial blades 5 and is secured to a shaft 6 which passes out in a liquid-tight manner through a stuffing-box 20 and drives the fan-shaped member 4. The pump housing further contains a change-over member 7 partly engaging the fan-shaped member 5 at one side and completely engaging the pump lid 1 at its other side. The change-over member is provided with two axial openings 8 and 9 corresponding to two of three connections 10, 11 and 12 provided in the lid 1. In the position shown in the drawing, they register with the connections 10 and 11 whose distance B between the centres is equal to that of the openings 8 and 9, all connections and openings being equally spaced from the pump shaft. The line B connecting the centres of the connections 11 and 12 corresponds to the line B connecting the centres of the connections 10 and 11. The change-over member 7 further comprises a stop 13 engaging a slot 14 of the pump housing.

When the pump described rotates in the direction indicated in Fig. 2 water, for example, will be drawn in through the aperture 9 and delivered through the aperture 8. These apertures register with the connections 11 and 10 of the pump lid, to which a suction pipe and a delivery pipe are connected respectively. If the sense of rotation of the fan is reversed the change-over member will be carried along by the fan due to friction, the stop 13 moving in the slot 14 till it reaches the other end 15 of the slot, thus preventing further rotation of the change-over member. The apertures 8 and 9 in the change-over member now register with the connections 11 and 12 of the pump lid, the connection 11 continuing to draw in, but the liquid being delivered through the connection 12, whereas the connection 10 is closed.

What is claimed is:

1. A rotary pump comprising a housing having a plurality of apertures therein, a shaft in said housing, a fan-shaped member having radial blades mounted on said shaft, and a disc-shaped change-over member for the medium to be pumped partly engaging said fan-shaped member and completely engaging a portion of said housing arranged concentrically with said shaft in said housing and having a plurality of openings therein, the friction between said change-over member and said fan-shaped member upon reversal of the direction of rotation of said pump causes at least two of said openings of said change-over member to selectively register with at least two corresponding apertures in said housing.

2. A rotary pump as claimed in claim 1 wherein said change-over member is provided with a stop element and said housing has an arcuate slot in which said stop is adapted for movement to the limits of said slot whereby selective registration of said openings and apertures is achieved.

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