April 10, 1928.

1,665,931

J. E. NOEGGERATH

DISTRIBUTION OF LIQUIDS

Filed Aug. 12, 1921

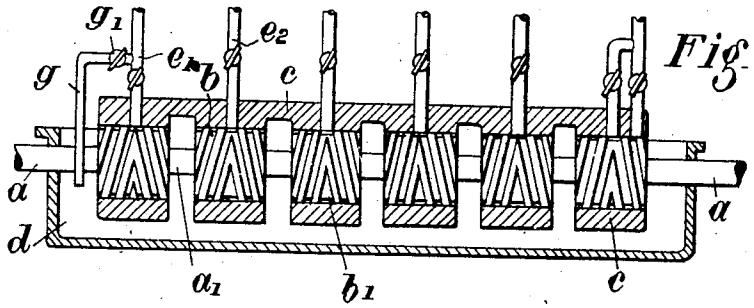


Fig. 1.

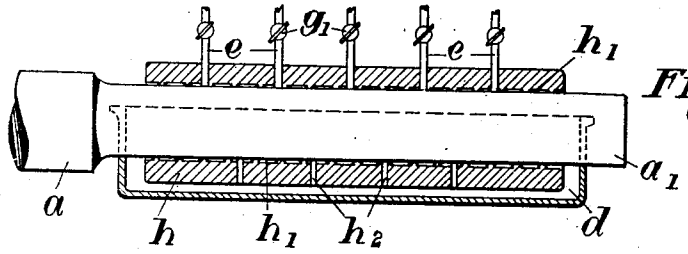


Fig. 2.

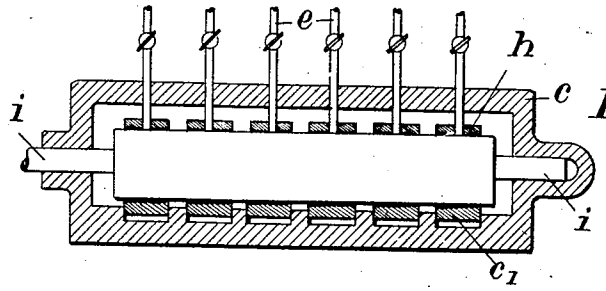


Fig. 3.

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JACOB EMIL NOEGGERATH, OF THE HAGUE, NETHERLANDS.

DISTRIBUTION OF LIQUIDS.

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(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

My invention relates to the distribution of liquids by pumping, and more especially to a central pump system comprising a plurality of pumps operated conjointly.

Now, in contradistinction to central pump-systems of the well known kind, the pumps of which are disposed in juxtapositions, but for the rest are independent pump systems of their own, my invention substantially consists in a combination of viscosity pumps of the type known per se, operating in direct contiguity, usually without requiring any packing whatsoever. By these means, the entire pump system is rendered considerably simpler and far more reliable than the forms of construction hitherto made use of. By employing a plurality of viscosity pumps operating in juxtaposition and fed by a common suction chamber, the method of assembling the pump set and taking it apart again whenever required will be substantially simplified.

With viscosity pumps, for instance with helical grooves, it will be found expedient to provide them in the customary manner with threads running in opposite directions. Thus the side thrust is avoided in a simple manner and further, as a result, the entire system will be simplified by employing only a single rotor across which there is placed a tube or casing. This is kept from rotating by any suitable means, for instance, by the pressure or suction pipes themselves. Then the rotor may form its own bearing.

In the drawings affixed to this specification and forming part thereof, several pump systems embodying my invention are illustrated in a purely diagrammatic manner by way of example. In the drawings

Fig. 1 is a vertical section;

Fig. 2 is a part sectional view illustrating the simple manner of attaching the novel system to rotary machinery of any kind.

Fig. 3 is a similar view of another modification.

Referring to Fig. 1, there are arranged on a common line of shafting a, a_1, etc. a plurality of cylindrical bodies b, the number of which corresponds to that of the points to be separately supplied. On the said bodies b there is cut a fine helical thread b_1 forming the delivering and pressure creating part of the pump. In Fig. 1 the thread is shown greatly exaggerated for the sake of clearness. All the pumps b, which are located within a single casing c, are preferably arranged in such a manner that the rotors require no special bearing, running directly in the casing. The liquid is preferably sucked by all the pumps from a common container d. It is sucked up by the several threaded sections and conducted through the various separate conduits e_1, e_2, etc. to the points of delivery. At the same time, the pressure and the conveying groove conduits of the individual pumps may be made entirely independent of each other in order to adapt them to the special requirements of the single points of delivery. Nevertheless, all the pumps may be conveniently mounted on a single shaft and housed within a single casing. The delivery side of each pump, in the form shown in Fig. 1, is packed relatively to the suction space of the adjoining pump by means of the construction shown, i. e., the cylindrical bodies are provided with fine oppositely directed helical grooves extending to each side of the delivery conduit, whereby the liquid is prevented from escaping into the suction space of the adjoining pump.

In the form disclosed in Fig. 2, there is disposed on a shaft a, or its extension a_1, a simple casing h. Into the inner surfaces of this casing there are cut the grooves h_1. The pumps are fed from the container d either directly or through a suction pipe h_2. In this case the pressure pipings e, which are fitted with throttling devices g_1, are adapted to prevent any rotation of the tube or casing h.

Fig. 3 discloses the novel central lubricating system, which is of a somewhat greater length so that the rotary part thereof is preferably supported by two bearings i within the pump casing c. The pumps proper are formed by a plurality of separate casings h mounted on the common shaft, and suitably provided with a double thread running in opposite directions. The individual casings are prevented from participating in the rotary motion and, if need be, are also safeguarded against any endwise displacement either by the pressure pipings e, themselves, or else they are retained in special grooves c_1, embodied in the casing, as shown more fully in the lower part of Fig. 3.

While I have described my invention in connection with the details of the embodiments illustrated in the drawings, I do not intend to limit the invention to such details,

as changes and modifications may be effected therein without departing from the spirit and scope of my invention. Thus, for example, use may be made also of viscocity pumps adapted to deliver either radially or both radially and axially.

I claim:

1. A system of the kind described comprising in combination, a stationary body, a body in contact with and capable of revolving relatively to said stationary body, a plurality of juxtaposed groups of viscosity threads in one of the contacting surfaces and several conduits adapted for cooperation with said groups of threads.

2. A system of the kind described comprising in combination, a stationary body, a body in contact with and capable of revolving relatively to said stationary body, a plurality of juxtaposed groups of viscosity threads in one of the contacting surfaces and a separate conduit for each group of threads.

3. A system of the kind described comprising in combination, a container, a shaft capable of revolving in said container, a plurality of juxtaposed casings on said shaft in contact with its surface, means for preventing rotation of said casings and a group of viscosity threads in one of the surfaces contacting in each individual casing.

4. A system of the kind described comprising in combination, a container, a shaft capable of revolving in said container, a plurality of juxtaposed casings on said shaft in contact with its surface, means for preventing rotation of said casings, a group of viscosity threads in one of the surfaces contacting in each individual casing and a conduit adapted for cooperation with each casing.

5. A system of the kind described comprising in combination, a container, a shaft capable of revolving in said container, a plurality of juxtaposed casings on said shaft in contact with its surface, means for preventing rotation of said casings and a group of viscosity threads on each portion of said shaft which is surrounded by a casing.

6. A system of the kind described comprising in combination, a plurality of juxtaposed helical groove viscosity pumps adapted to convey liquid in radial direction.

In testimony whereof I affix my signature.

JACOB EMIL NOEGGERATH.