

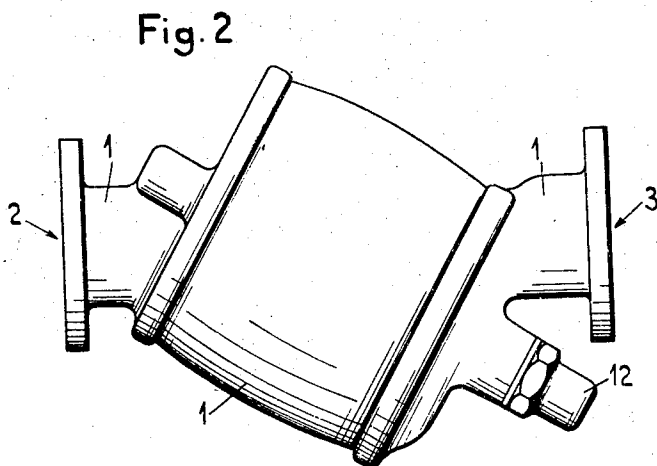
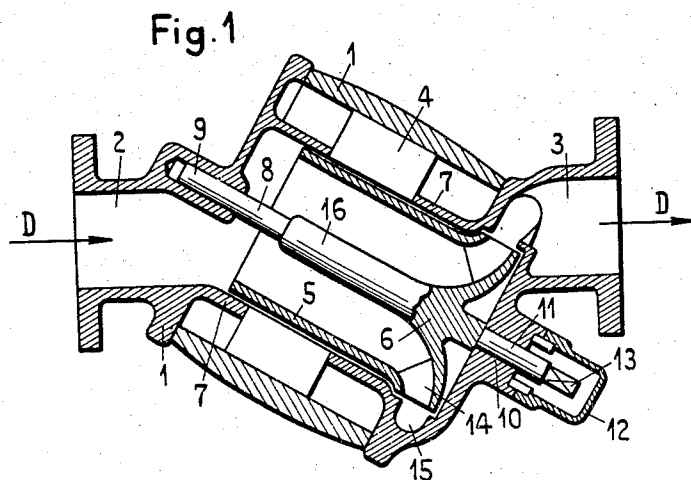
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DELIVERY AGGREGATE FOR LIQUID OR GASEOUS MEDIA

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DELIVERY AGGREGATE FOR LIQUID OR GASEOUS MEDIA

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4 Claims. (Cl. 103—87)

The present invention relates to a delivery aggregate for liquid or gaseous media, in which the delivery member is driven by a motor.

Delivery aggregates of the type are known, in which the axle shaft of the delivery member is arranged transversely to the direction of flow of the medium delivered. This type makes it possible to have one or both shaft ends visible and in a given case accessible from outside. It has, however, disadvantages in that the driving unit transverse to the run of the piping conducting the medium represents a disturbing element, so as to preclude under circumstances a convenient run of the piping. In addition, the medium introduced at the suction side into the delivery member may be subject to great alterations in the direction of the flow, restricting the range of application of the pump.

The object of the invention is to provide a delivery aggregate of said type incorporating the merits of the mentioned design without its drawbacks.

According to the invention, this is essentially accomplished in that at least one end of the axle shaft of the structural unit is located outside the medium-inlet or medium-outlet of the aggregate.

Other features of the invention will appear from the claims, specification and accompanying drawing which, simplified, represents by way of example a preferred form of embodiment incorporating the invention.

Fig. 1 is a sectional view, and

Fig. 2 is a lateral view of the object of invention.

The delivery aggregate comprises a casing 1 which, besides the inlet 2 and outlet 3 of the medium, accommodates an electric motor having a wound stator 4 and a non-wound but solid slotless rotor 5, the latter constituting with the delivery member 6 a structural unit. The rotor 5 is surrounded by the stator and the casing part 7 connected thereto, the ends of which open into the passage-way D—D or inlet 2 and outlet 3. As driving member, any motor, preferably an asynchronous motor may be employed, such as described in Swiss Patent No. 193,737.

The aggregate is of such design that the stator 4 and the unit formed of the rotor 5 and delivery member 6 are not coaxially but obliquely disposed to the general direction of flow D—D given by the inlet 2 and outlet 3, i. e. to the axis of the piping system neighboring the aggregate. Preferably, the angle at which the axle shaft 8 of the rotor 5 and delivery member 6 intersect the general axis of flow D—D, is about 20 to 30°; in any case, only angles less than 90° are provided. Due to the fact that in this way the ends of the axle shaft 8 will be located outside the inlet 2 or outlet 3 it is made possible that both axle shaft bearings 9 and 10—though the medium flows axially through the rotor 5—are not located within the casing 1 or in direction of inlet 2 or outlet 3, but lateral thereto, and this again makes it possible to render visible or accessible from outside one or both shaft ends. According to the embodiment as in Fig. 1, the

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end 11 of axle shaft 8 is so extended as to pass through the bearing 10 and the casing wall. The shaft end is covered by a protecting cap 12, preferably transparent, and detachably mounted on the casing. Said cap 12 could also be hinged so as to be capable of being raised and lowered. Thus the service conditions, direction of rotation and number of revolutions of the pump could readily be observed from outside.

To put the rotor 5 with delivery member into action—without dismantling them after a lengthy standstill with possible blocking—this structural unit 5, 6 may be caused to start by turning the projecting shaft end 11. For this purpose the latter includes a square head or polygonal extension 13.

As apparent from Fig. 1, the delivery member 6 is designed as radial impeller with vanes 14, by which the medium passing axially through the rotor 5 is thrown substantially radially into the collector 15. In a given case the forces causing axial thrust are resiliently transmitted through the strengthened middle-piece 16 of the rotor, shaft 8 and bearing 9 or the flanges of the inlet and outlet branches 2 and 3. Alternatively, instead of a radial pump or a radial blower, also an axial pump or a diagonal pump or an appropriate blower may be provided.

The bearing 10 is of the plain type which, in the case of a liquid pump, will be automatically lubricated by the fluid delivered, the use of a stuffing-box being dispensed with, inasmuch as the shaft end 11 projecting from the pump 12 is tightly sealed by the closing cap 12 or other suitable closing member.

In the aforescribed embodiment, the medium may be introduced to the suction side without great alterations of the direction of flow. In this way the suction conditions of the pump will be approximately the same as with axial feed of the handled medium. The same advantage also appears at the delivery side of the aggregate inasmuch as, after the impeller, all elements may be arranged for a proper pressure conversion of the medium leaving the delivery member at a certain velocity, without the flow of the medium having to be subject to great alterations thereafter.

The described delivery aggregate has the advantages of a pump, whose axis coincides with that of the piping system in immediate neighborhood of the pump, together with the merits of a pump, the motor of which is at right angles to the axis of the piping system and may thus be observed in the direction of rotation. In addition, the aggregate may be designed for a wider range of applications, inasmuch as great alterations in introducing the medium and leading it away are avoided.

In operation, the aggregate is more economical for the said reasons, and nevertheless possesses a shaft end visible and accessible from outside; if installed in a supply piping it will form a harmonic element, since motor axis and piping axis are not at right angles to each other.

What I claim is:

1. A pump for fluids comprising a casing having an inlet at one end and an outlet at the other end, a rotor and delivery member formed as a structural unit, a stator secured in the casing and forming with the rotor an electric motor to drive the delivery member, said inlet and outlet being co-axial relative to each other, and a shaft for the rotor and delivery member rotatably mounted in the casing and extending axially at an angle relative to the inlet and outlet axis and at least one end of the shaft extends outside of the casing, for manual rotation of the rotor and motor.

2. A pump according to claim 1, in which a cover cap is provided fitting on the casing and enclosing the end of the shaft extending outside of the casing.

3. Centrifugal pump for fluids and gaseous media to

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be built into and form a part of a pipe line, comprising a casing with opposite inlet and outlet members which are coaxial relative to each other, an electric motor having a stator secured in the casing and a rotor rotatably mounted in the casing between the inlet and outlet members, said rotor comprising a delivery member, a shaft rotatably mounted in the casing and coaxial with the rotor which together with the delivery member are mounted on the shaft, said rotary axis of the rotor and shaft and the axis of the inlet and outlet members comprising a sharp angle relative to the direction of flow of the fluid, and means on one end of the shaft forming an extension thereof and projecting outside the casing and also having means thereon to rotate the shaft from the outside of the casing for manual rotation of the motor and rotor as a unit.

4. Centrifugal pump according to claim 3, in which a cap is provided to cover the extending end of the shaft, said cover being at least partly transparent.

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