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(54) A PUMP

(71) We, SIEMENS AKTIENGESellschaft, a German Company, of Berlin and Munich, West Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a pump, particularly, although not exclusively, a process pump for pumping lye or other corrosive liquids.

According to the present invention there is provided a pump comprising a base and a housing containing a rotary impeller, the base and the housing being pivotally interconnected by means of a hinged connection which is releasable when the pump is in a hinged open position, a snap-action catch being provided for retaining the pump in a hinged closed position, this catch having a retaining member which is movable into a retaining position in a direction parallel to a plane containing the rotary axis of the impeller, the hinged connection and the catch being on generally opposite sides of the pump and the housing being sealingly engaged with the base in the hinged closed position.

Embodiments of the present invention provide pumps in which the housing and base are easily releasable and yet in which a tight seal can be obtained between them.

For a better understanding of the present invention and to show how it may be carried into effect, reference will now be made, by way of example only, to the accompanying drawings, in which:

Figure 1 shows a side view of a known lye pump unit;

Figures 2 and 3 show, in side and plan view respectively, a first embodiment of a lye pump in accordance with the present invention; and

Figures 4 and 5 show, in side and plan view respectively, a second embodiment of a lye pump in accordance with the present invention.

Figure 1 shows an entire lye pump unit

of known design which is described and claimed in our Patent Specification No. 1,446,038. The pump is driven by a shaded pole motor 5 of asymmetrical construction having an operating winding cast in a winding case 6. On the right-hand end of the output shaft as seen in Figure 1 is a fan wheel 7; on the left hand end of the shaft is fitted a pump impeller, not shown in detail in the drawing, which is supported in a bearing plate constituted by a base 2 of the pump. The base 2 and a pump housing 1 are hinged together by a hinge comprising two parts 3 and 4 which are releasable from one another when the pump is hinged open. The base 2 and the pump housing 1 are represented in a closed position relative to one another where they are held by a lever 18. Hoses, not shown in the drawing, are fixed to a pressure connection 12 and to a suction connection 11 of the housing 1.

In the pump shown in Figures 2 and 3, the pump is held in the closed position by a snap-action catch including a retaining member which is movable into a retaining position in a direction parallel to a plane containing the axis of the impeller. The retaining member comprises a hinged wire loop 8, pivotably mounted on journals 21, 22 moulded on to the base 2. In the closed position of the pump the loop 8 engages with a free end 81 in a retaining groove 14. On the side of the pump base 2 opposite the hinged wire loop 8 there is moulded an axle pin 33 with end journals 31, 32. Moulded on to the housing 1 are corresponding bearing boxes 41, 42 having bearing recesses into which the journals 31, 32 can be press fitted to form a hinged connection. The journals 31, 32 are pressed into the recesses by an elastic member 19 also connected to the pump housing. As will be appreciated from Figure 2, the pump housing is provided with a bevel 13 for engagement by the free end 81 of the hinged wire loop 8. During the closing operation the pump housing first rests in a slightly open oblique position because a

seal is provided between the base and the housing (this seal is not represented in detail in the drawings). The free end 81 of the wire loop 8 slides up the bevel 13 in the direction towards the axes of the impeller to compress this seal before engaging in the retaining groove 14. A tightly-sealed joint between the housing 1 and the base 2 is ensured by this snap-action catch and by the hinged connection formed by the journals 31, 32, pressed firmly by the member 19 into the recesses of the bearing boxes 41, 42. When the pump is opened, the journals 31 and 32 can be released from the bearing boxes 41, 42, so separating the base 2 from the housing 1.

Figures 4 and 5 show another form of axially acting snap-action catch, the design being otherwise the same as that of Figures 2 and 3, particularly with regard to the hinged connection between the housing 1 and the base 2. In the catch represented in Figures 4 and 5, a detent 9 is moulded on to the housing which detent, when closing the pump, is first deflected towards the axis of the impeller as a face 92 slides over an edge of a corresponding stop opening 13 provided in the base 2 and then, in the closed position, engages elastically behind the lower edge of the stop opening 13 by means of a barb 91. The housing 1 and the base 2 are thus firmly closed together.

The design of a lye pump in accordance with the embodiments of the present invention described above provides a simple sealing closure between the housing and the base which is easily releasable and is to a large extent independent of tolerances of the structural parts.

WHAT WE CLAIM IS:—

1. A pump comprising a base and a housing containing a rotary impeller, the base and the housing being pivotally interconnected by means of a hinged connection which is releasable when the pump is in a hinged open position, a snap-action catch being provided for retaining the pump in

a hinged closed position, this catch having a retaining member which is movable into a retaining position in a direction parallel to a plane containing the rotary axis of the impeller, the hinged connection and the catch being on generally opposite sides of the pump and the housing being sealingly engaged with the base in the hinged closed position.

2. A pump as claimed in claim 1, in which the retaining member of the snap-action catch comprises a wire loop which is pivotally mounted on the base and which engages the housing in the closed position.

3. A pump as claimed in claim 1, in which the retaining member of the snap-action catch comprises an elastic detent which is moulded onto the housing and which engages an opening formed in the base in the closed position.

4. A pump as claimed in any one of the preceding claims, in which the hinged connection comprises two bearing recesses formed in the housing in which engage journals connected to the base, the journals being resiliently pressed into the recesses by an elastic member connected to the housing.

5. A pump as claimed in any one of the preceding claims, being a process pump for pumping lye.

6. A pump substantially as specifically described herein with reference to Figures 2 and 3, or 4 and 5 of the accompanying drawings.

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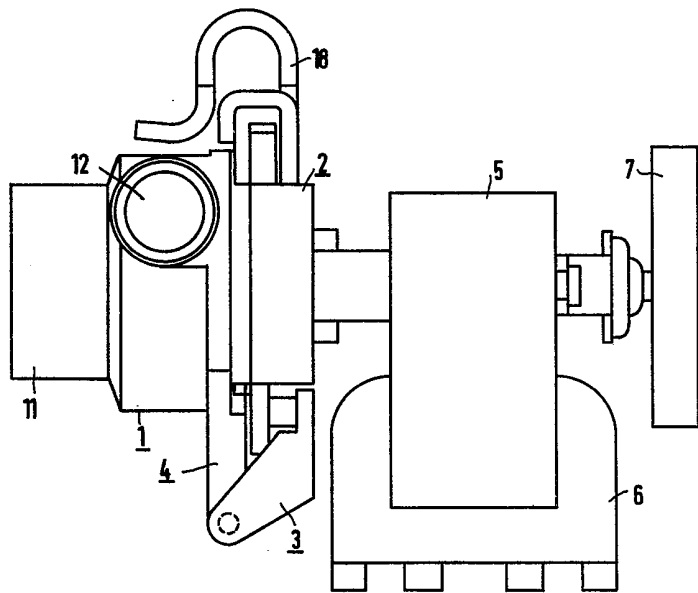


Fig.1

