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HOUSING OF ARTIFICIAL MATERIAL FOR
SINGLE STAGE CENTRIFUGAL PUMPS
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FIG. 1.

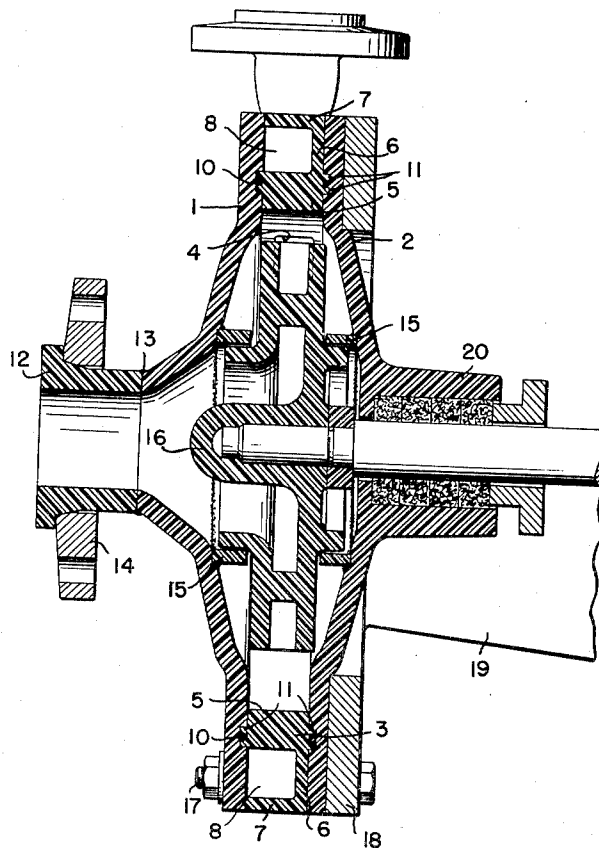
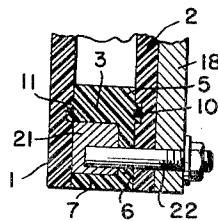


FIG. 2.



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HOUSING OF ARTIFICIAL MATERIAL FOR SINGLE STAGE CENTRIFUGAL PUMPS

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Substituted for abandoned application Serial No. 136,318, December 31, 1949. This application April 27, 1955, Serial No. 504,266. In France February 27, 1948

Public Law 619, August 23, 1954
Patent expires February 27, 1968

3 Claims. (Cl. 103—103)

This application is a substitute for application Serial No. 136,318, now abandoned.

The present invention relates to a housing for single stage centrifugal pumps having their rotor arranged in the housing in overhung fashion and employed especially for the conveyance of acids, and is particularly directed to a housing of this type made in an economical way from artificial material through pressing and which, moreover, has been so devised that it can be used, through the exchange of only one of its parts, for pumps of varying conveying capacity.

Housings of the aforesaid kind may be produced from artificial material either through casting or pressing depending upon the nature of the material used in the manufacture. If plastic material is to be employed for the production, the latter has to be effected through pressing, whereby, contrary to casting, the housings have to be divided up into a plurality of parts suited for the pressing.

Hence, it is an object of the invention to devise the parts in such a way that only a few parts are needed whose assembly can be easily and reliably effected and whose manufacture requires the smallest possible quantity of material.

According to the invention the housing is made of artificial plastic material, such as acid-proof mix polymerisators, and consists of one cover for the suction side and another one for the driving side, and a spacing ring arranged between the two covers and forming the inner housing spiral with discharge branch.

In this way a housing has been created which consists of only three parts, which can be produced through pressing in the simplest manner and without the slightest difficulty, whereby if the spacing ring is devised in a suitable way, considerable savings of material can be made. Furthermore, the separate production of the parts makes it possible to use uniformly shaped spacing rings and uniformly shaped covers of the driving side in combination with varying types of covers on the suction side, so that by merely exchanging the cover on the suction side the conveying capacity of the pump can be regulated according to requirements.

According to the invention the spacing ring may consist of an inner ring portion and an outer ring portion concentric with the inner ring portion and connected thereto by a radial flange at one of the two flat sides of said ring portions and provided with suitable reinforcing ribs between the two ring portions. It will be noticed that in a construction of this type the use of the full amount of material has been limited to the place where it is really needed, viz. for the formation of the closed inner pump housing, while the outer portion of the spacing ring has, for economical reasons, been provided with an essentially annular recess, whereby considerable savings of material have been made and whereby the strength of that portion of the ring has been limited to what is actually required for the reliable assembly of the three parts.

The spacing ring of the invention has further been

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equipped on both of its flat sides with an annular groove for the insertion of a packing ring, whereby the production of a perfectly tight housing has been reliably guaranteed.

In order to facilitate the assembly of the three parts it is further advisable to provide the spacing ring in a suitable way with adjusting screws, which may be embedded with one of their ends in reinforced portions between the inner and outer ring and which extend with their free ends through holes arranged for that purpose in the cover of the driving side of the device.

According to the invention the suction branch of the housing consists likewise of artificial plastic material and has been welded to the cover of the suction side.

The cover on the driving side is provided with a neck portion produced integral with the cover and adapted to receive the stuffing box packing.

Both of the covers should further preferably be equipped on their inside with packing rings toward the rotor, which packing rings may either be formed when pressing or fastened to the cover through welding.

The housing may, according to the invention, be secured to a bearing pedestal through the intermediary of a ring, connected to and supported by an arm of said bearing pedestal whereby the housing may be fastened to the ring with the aid of bolts. This way of attachment is of the simplest kind and easily effected.

Additional features and advantages of the invention will be understood from the following detailed description taken in connection with the accompanying drawings showing by way of example a preferred embodiment of the invention. However, it is to be understood that the invention is not confined to any strict conformity with the drawings, but may be changed or modified, so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings

Fig. 1 is a central vertical section of the centrifugal pump;

Fig. 2 is a sectional view of the spacing ring, showing how the adjusting screws are embedded in the ring.

Referring now to the drawings in detail, the reference numeral 1 in Fig. 1 denotes the cover of the housing on the suction side, while 2 is the cover on the driving side, and 3 the spacing ring between the two covers. The latter forms with its inner wall the housing spiral in which the discharge branch 4 is arranged. The spacing ring 3 consists of the inner ring portion 5, extending at one of its flat sides into a radial flange 6, terminating in an outer ring portion 7. The outer ring portion 7 is concentric with the inner ring portion 5. Positioned between the outer ring portion and the inner ring portion are reinforcing ribs 8. In addition to this there are provided in the hollow space between the two ring portions occasional fillers 21 (see Fig. 2) in which the ends of the adjusting screws 22 are embedded, which with their free ends are pointing toward the driving side.

The inner ring portion is also equipped on each of its flat surfaces with annular grooves, in which the packing rings 10 are arranged, which may consist of rubber or the like.

The ring portion 5 is further provided with the projecting portions 11 engaging in corresponding recesses in the covers 1 and 2.

The suction branch 12, which is likewise produced from artificial plastic material and secured to the cover 1 through welding at 13, is provided with a collar 14. The cover on the driving side 2 has a neck portion 20, formed integral with the cover, in which the stuffing box packing is arranged.

Both of the covers have packing rings arranged on the

inside of the covers at 15. The packing rings are either welded onto the covers or produced integral with the latter through pressing, and act in cooperation with corresponding surfaces of the rotor 16 as packing.

The parts forming the housing are held together with the aid of the bolts 17, which simultaneously serve as a means for fastening the housing to the supporting member 18 secured to an arm of the bearing pedestal 19.

The cover 1 of the suction side of the pump is interchangeable and may be exchanged for some other cover provided with a suction branch of larger inner diameter, so that the housing may also be used for pumps with greater conveying capacity.

Having now fully described my invention, I do not wish to be limited to the illustrative embodiment thereof, but what I claim is:

1. A housing of plastic material for a single stage centrifugal pump having an overhung rotor adapted particularly for the conveyance of acids, said housing being constituted of plastic members having smooth continuous inner and outer surfaces and comprising a cover for the suction side of the pump having a central passage, a cover for the driving side of the pump including a cylindrical bearing housing, and a spacing ring disposed between said covers having outer and inner surfaces extending parallel to the axis of the pump with the inner surface being formed to constitute the spiral for the pump and having a substantially U-shaped cross-section disposed with the open end against one of said covers, a supporting member adjacent the other of said covers, and a plurality of screws extending through said covers and said ring for simultaneously holding the covers and said ring together and supporting them on said supporting member.

2. A housing of plastic material for a single stage centrifugal pump having an overhung rotor adapted particularly for the conveyance of acids, said housing being constituted of plastic members having smooth continu-

ous inner and outer surfaces and comprising a cover for the suction side of the pump having a central passage, a cover for the driving side of the pump including a cylindrical bearing housing, and a spacing ring disposed between said covers having outer and inner surfaces extending parallel to the axis of the pump with the inner surface being formed to constitute the spiral for the pump, said spacing ring having a substantially U-shaped cross-section forming a channel and disposed with the open end against one of said covers, and fillers in said channel supporting one end of adjusting screws projecting through said ring into the other of said covers, a supporting member adjacent the other of said covers and a plurality of screws extending through said covers and said ring for simultaneously holding the covers and said ring together and supporting them on said supporting member.

3. A housing of plastic material for a single stage centrifugal pump having an overhung rotor adapted particularly for the conveyance of acids, said housing being constituted of plastic members having smooth continuous inner and outer surfaces and comprising a cover for the suction side of the pump having a central passage, a cover for the driving side of the pump including a cylindrical bearing housing, a U-shaped spacing ring disposed between said covers having outer and inner surfaces extending parallel to the axis of the pump with the inner surface being formed to constitute the spiral for the pump, a suction stub of plastic material welded to said central passage in said cover for the suction side of the pump, a supporting member and a plurality of screws extending through said covers and said spacing ring for holding said covers and said ring against each other and against said supporting member.

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