

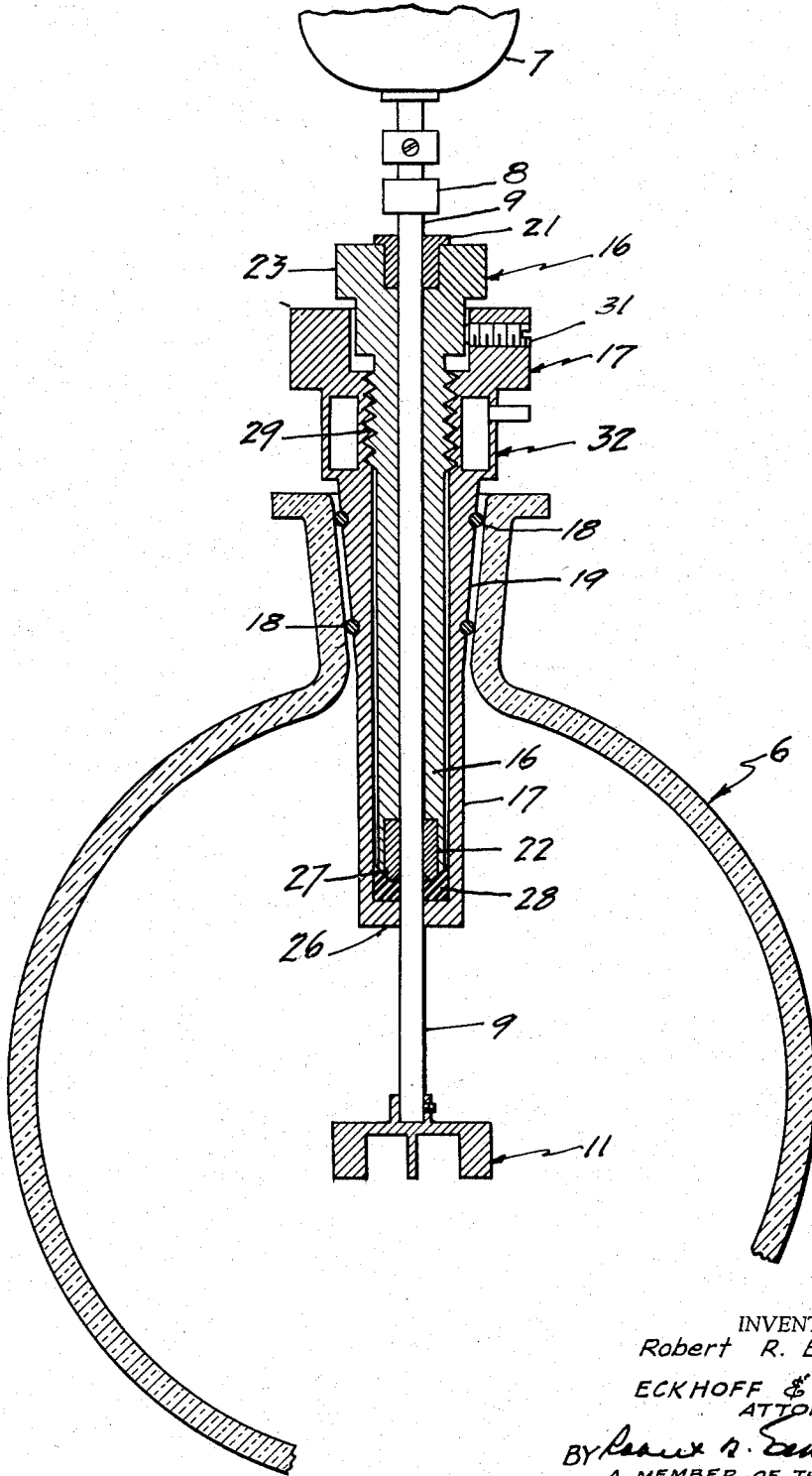
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VACUUM PACKING GLAND FOR HIGH SPEED STIRRING

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2,901,295

VACUUM PACKING GLAND FOR HIGH SPEED STIRRING

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1 Claim. (Cl. 308—36.1)

This invention relates to stirring devices such as are widely utilized, for example, in carrying out chemical reactions. To facilitate the reaction, it is usual to stir the several reactants to ensure the early completion of the reaction.

The stirring device usually includes a shaft rotated at a high speed, e.g., from 10,000 to 18,000 revolutions per minute. It will be obvious that such high speeds inherently provide a problem in support of the shaft of the stirring device. In addition, it is essential to ensure that the reactants do not gain access to the interior of the stirring device, otherwise leakage from the reactants may occur or harm in the stirring device because of corrosion. The present invention provides a stirring device in which adequate support of the shaft is given; at the same time, an adequate seal is provided about the shaft enabling a desired pressure to be maintained in the closed system in which the device is employed. Additionally, the device of the present invention enables the device to be maintained fluid-tight and to be adjusted while in operation.

It is in general the broad object of the present invention to provide an improved stirring device, particularly one which provides an adequate seal against the reactants or loss of pressure or vacuum and which can be adjusted while the stirring device is in use.

The invention includes other objects and features of advantage, some of which, together with the foregoing, will appear hereinafter wherein the present preferred form of stirring device is disclosed. In the drawing accompanying and forming a part hereof, Figure 1 is a side elevation partly in section, showing the stirring device embodying the present invention.

Referring to the drawing, I have indicated the usual laboratory set-up in which a stirring device is employed to stir reactants in a glass flask 6. The stirring device is operated as by motor 7 connected by a flexible coupling 8 to one end of the stirring device shaft 9. At its other end, shaft 9 includes a suitable agitator structure, generally indicated at 11.

To support the shaft 9 for rotation, a first shaft support means 16 and a second shaft support means 17 are provided. The second shaft support means includes O rings 18 which retain tapered section 19 on the support 17 in engagement with a similarly tapered section of the flask 6. If desired, connection to the flask can be made through a stopper, in which case the section 19 may be made with parallel sidewalls.

The first shaft support means is tubular and includes spaced bearings 21 and 22 at opposite ends and which support the shaft for rotation. The exposed end 23 of the first shaft support means is fashioned to receive

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a wrench so that it can be adjusted, as will be explained.

The second shaft support means 17 is also tubular and fits about the first shaft support means, the second shaft support means having an end 26 through which the shaft 9 extends. The end 26 is closely adjacent to end 27 on the first shaft support means, a packing material 28 being interposed between the two to provide a seal between the two shaft support means and about the shaft.

To permit of positive adjustment of the two shaft support means with respect to one another, the two are joined by a screw thread connection 29, the position of adjustment of the two being maintained by set screw 31 which engages the first shaft support means.

Preferably, the first shaft support means is made of a good heat conducting material such as brass, while the second shaft support means may be made of a material such as stainless steel. Since heat may be generated in the continued operation of the shaft starting device at high speed, a cooling jacket 32 is provided about the second shaft support means and a cooling medium is circulated through this to carry away heat which may otherwise be generated.

From the foregoing, I believe it will be apparent that I have provided a novel, simple, and improved shaft stirring device in which the shaft is supported by spaced bearings, these being spaced a substantial distance apart so that the shaft is adequately supported at high speed rotation. In addition, means are provided for adjusting the stuffing gland provided about the shaft while the shaft is rotating.

I claim:

A shaft seal and a bearing support for a high speed rotatable stirring shaft consisting of a first shaft support means comprising an elongated tubular shaft support member having a first bearing and a second bearing therein, said bearings being spaced apart and being at opposite ends of the shaft support means to support the shaft for rotation, a second shaft support means comprising an elongated tubular casing surrounding the first shaft support means and having a first end through which said shaft extends, said first end being cooperatively adjacent to and spaced from an adjacent end on the first shaft support means, packing between said first end and said adjacent end, a screw thread connection between said first and second shaft support means for moving the first shaft support means longitudinally of the second shaft support means, to compress said packing, the end of said first shaft support means and said second bearing being V-shaped in section to engage the packing and force the packing to engage the shaft positively upon movement of the first shaft support means longitudinally of the second shaft support means and of the second bearing toward the first end on the second shaft support means.

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