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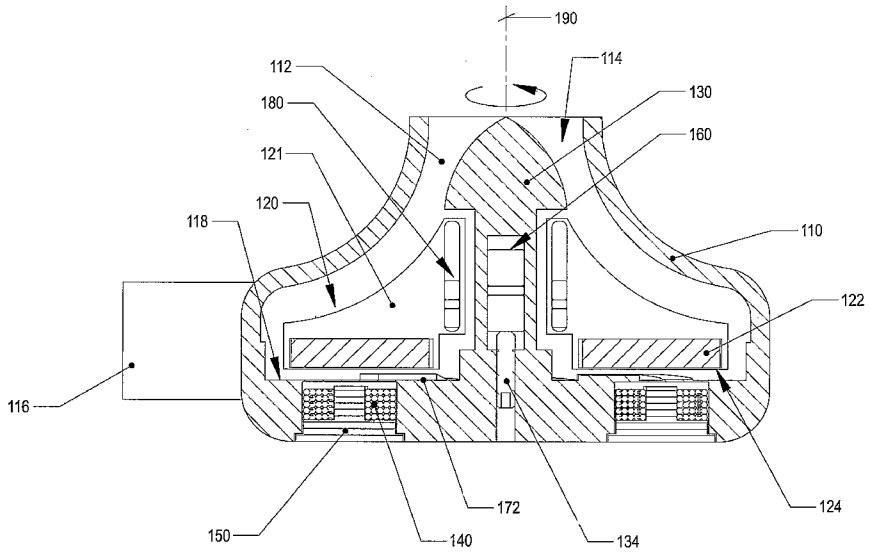
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(54) Title: ROTARY BLOOD PUMP



(57) Abstract: Various "contactless" bearing mechanisms including hydrodynamic and magnetic bearings are provided for a rotary pump as alternatives to mechanical contact bearings. In one embodiment, a pump apparatus includes a pump housing (110) defining a pumping chamber (112). The housing has a spindle (130) extending into the pumping chamber. A spindle magnet assembly (160) includes first and second magnets (262,264) disposed within the spindle. The first and second magnets are arranged proximate each other with their respective magnetic vectors opposing each other. The lack of mechanical contact bearings enables longer life pump operation and less damage to working fluids such as blood.

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