NASA TECH BRIEF

Design Concept to Decrease Relative Speed of Ball Bearings

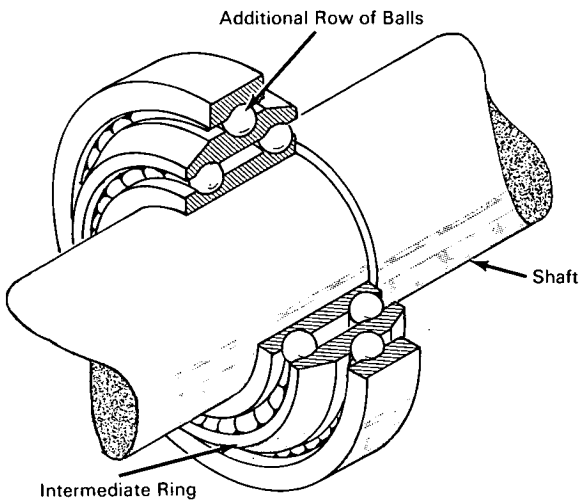

FIGURE 1

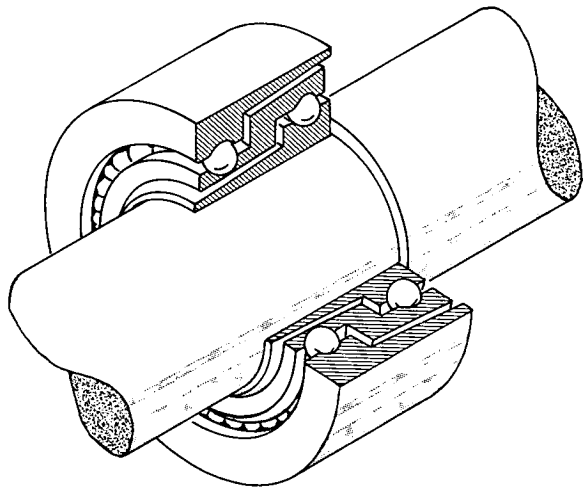

FIGURE 2

The problem:

To decrease the rolling speed of a ball bearing relative to the rotational speed of the shaft. Among other factors, the maximum operating speed of a ball bearing depends on its size and the rolling speed of the balls within the raceways. The heat generated by fast rolling balls may damage the bearing.

The solution:

An intermediate ring with raceways on its inner and outer peripheries and an additional row of balls would cut the relative rolling speed of the inner and outer balls to approximately half that of the balls in the unmodified bearing. A ball bearing of this design would therefore operate at much higher shaft speeds than ball bearings of standard design.

Figure 1 indicates a possible arrangement for a bearing subjected to predominantly radial loads. Figure 2 shows an arrangement for light radial loads. The latter design would provide for radial preloading, absorption of thermal expansion by the intermediate ring, and automatic circulation of lubricating oil.

Note:

This invention is only in the conceptual stage; neither a model nor a prototype has been constructed as of the date of this Tech Brief.

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

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