

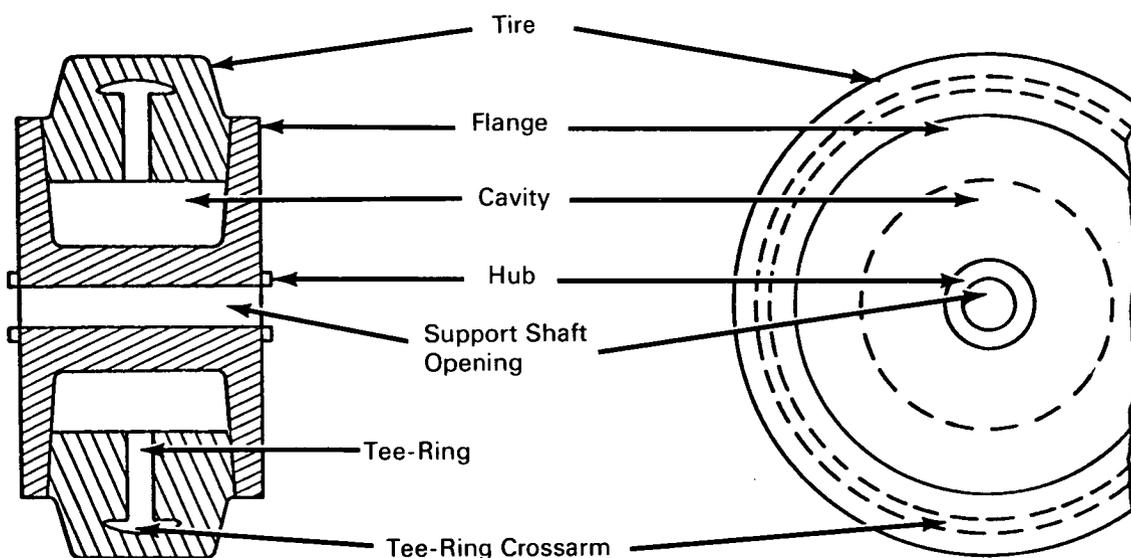


AEC-NASA TECH BRIEF



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Shock-Absorbing Caster Wheel Is Simple and Compact



The problem:

To develop a compact shock-absorbing caster wheel that is simple and requires no tension or compression spring arrangement.

The solution:

Shock is mitigated or absorbed by a compressible tire which deforms into a cavity between its inner edge and the wheel hub. A tee-shaped annular ring embedded in the tire distributes loads more uniformly throughout both wheel and tire.

How it's done:

Basically, the wheel includes a metal hub with a plate-like flange on each end and a rubber or elastomer tire with a durometer hardness of about 30 to 90 de-

pending upon the load/deflection characteristics desired. The tire is sandwiched between and bonded to the insides of the flanges in such a way that about half the tire extends beyond the flanges and a cavity is left between the inner edge of the tire and the center portion of the hub. On impact, the tire is deflected and deforms into the cavity. If the insides of the flanges slope inward, some of the shock will be absorbed by the flanges. The outer edge of the tire must be narrower than the center portion so that it will not overlap the edges of the flanges.

To distribute the loading more evenly, a tee-shaped metal ring, with a radius about three-fourths that of the tire and a crossarm about one-third as wide, is embedded in the tire and bonded to it. The stem end of the tee is even with the inner surface of the tire. On

(continued overleaf)

impact, the ring moves, deflecting the tire and distributing the load along the entire surface of the ring.

Notes:

1. Shock-absorbing casters of this type do not require springs, Belleville washers, or other mechanical components for shock absorption, thereby reducing the size and weight of the casters.
2. These casters could double as shear pads and protect against two-directional shocks when, for instance, a load is dropped onto an object resting on a hard surface.
3. In tests, these caster wheels satisfactorily absorbed the shock from the 12-inch free fall of a dolly and its contents onto a hard surface.

4. Inquiries concerning this innovation may be directed to:

Sandia Office of Industrial Cooperation
Org. 3413
Sandia Corporation
Post Office Box 5800
Albuquerque, New Mexico 87115
Reference: B68-10266

Patent status:

Inquiries about obtaining rights for commercial use of this innovation may be made to:

Mr. Dudley W. King, Chief
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U.S. Atomic Energy Commission
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