

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
20 October 2005 (20.10.2005)

PCT

(10) International Publication Number  
WO 2005/096739 A2

(51) International Patent Classification: Not classified

(21) International Application Number:  
PCT/US2005/010798

(22) International Filing Date: 31 March 2005 (31.03.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
200420028657.0 1 April 2004 (01.04.2004) CN

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(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ,  
TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA,  
ZM, ZW.

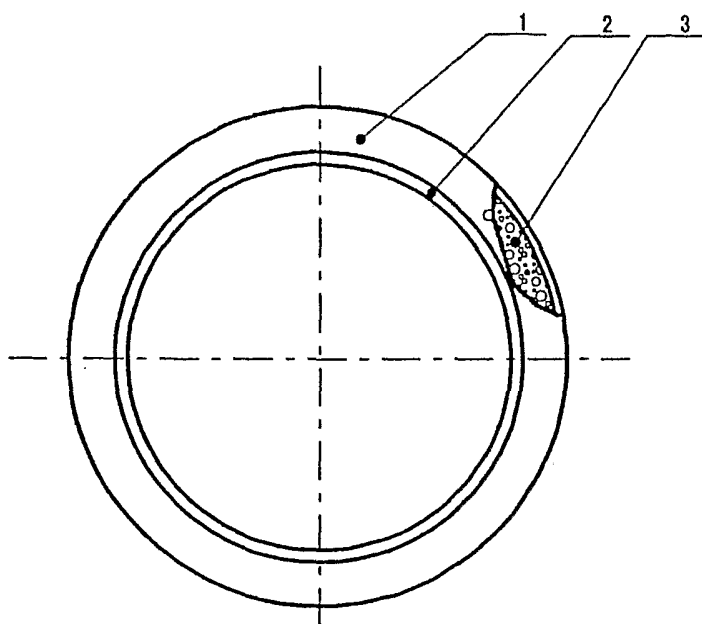
(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,  
SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,  
GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted  
a patent (Rule 4.17(ii)) for the following designations AE,  
AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ,  
CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE,  
EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS,  
JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA,  
MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM,  
PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY,  
TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA,  
ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ,

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(54) Title: HIGH-ELASTICITY, AIRLESS TIRE FOR HUMAN-POWERED VEHICLES



(57) Abstract: A high-elasticity, airless  
tire for human-powered vehicles that  
consists of a tire surface and a tire core,  
wherein a sealed pole-shaped tire core  
is wrapped tightly with a tire surface.  
A circular ridge is formed on the inner  
circumference of the surface of the  
sealed, round tire.

WO 2005/096739 A2



- NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations

**Published:**

- without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

## DESCRIPTION

### High-elasticity Airless Tire for Human-powered Vehicles

#### Field

The present utility model pertains to tires for human-powered vehicles. In particular, it relates to a high-elasticity, airless tires for human-powered vehicles.

#### Technical Background

Pneumatic tires are a type of hollow tire. Although, being light-weight and having good vibration resistance, they are in wide use, they suffer from many defects, such as vulnerability to punctures, tendency to leak, and bursting, and they have poor safety and reliability. As science and technology have progressed, many forms of airless tires have been developed in which the tire core and tread materials form a single whole. However, these suffer from nettlesome problems such as heaviness, poor elasticity, and high kinetic energy-depletion and consequently have not been put to wide use.

#### Contents of the Invention

The object of the present utility is to provide a high-elasticity, airless tire for human-powered vehicles that is light-weight, highly-elastic, abrasion-resistant and that overcomes the deficiencies of the current art.

The object of the present utility model is achieved as follows:

Said high-elasticity, airless tire for human-powered vehicles of the present utility model consists of a tire surface and a tire core, wherein a sealed pole-shaped tire core is wrapped tightly with a tire surface. A circular ridge is formed on the inner circumference of the surface of the sealed, round tire.

The tire surface is 3 – 7 mm thick; the tire ridge is 4 – 6 mm high.

The advantages and positive effects of the present utility model are:

The tire core is a polymer sponge foam consisting primarily of foamed natural rubber. It is highly elastic, light-weight and largely unaffected by impact, and it has good anti-vibration and load-bearing qualities. The tire surface is mainly composed of natural rubber, polyvinyl chloride resin, and high styrene material. It has the advantages of resistance to abrasion and aging and good cushioning and shock-resistance qualities. The combination of the two endows the resulting tire with outstanding quality and entirely overcomes the defects of current pneumatic tires. It is a substitute product for current pneumatic tires. In addition, a ridge is formed on the inner circumference of the tire surface of this product. This allows the tire to be seated firmly within the wheel rim. Tires having such a structure are especially suited to human-powered vehicles (bicycles, tricycles, wheel barrows, and carts).

#### Description of Attached Drawings

Fig. 1 is a front view of the present utility model.

Fig. 2 is an enlarged cut-away view of Fig. 1.

#### Embodiment

The present utility model will be explained in greater detail below in light of the attached drawings:

In said high-elasticity, airless tire for human-powered vehicles of the present utility model, the tire core **3** has a sealed pole-shaped structure. The tire surface **1** is wrapped tightly around the tire core, and a circular ridge **2** is formed on the inner circumference of the surface of the sealed, round tire.

The tire core is a polymer sponge foam consisting primarily of foamed natural rubber. The tire surface is mainly composed of natural rubber, polyvinyl chloride resin, and high styrene material. The materials of the ridge are the same as those of the tire surface. All three are heated in a vulcanizing mold, thus forming them and binding the tire core tightly to the tire surface. To improve traction, tread patterns may also be formed on the outer circumference of the tire surface.

The tire surface is 4 – 7 mm thick, and the tire ridge is 4 – 6 mm high.

## Claims:

1. A tire comprising:  
a tire surface having a ridge, said ridge disposed about the inner circumference of the tire surface;  
a tire core disposed within said tire surface.
2. The tire of claim 1 wherein said tire core has a sealed pole-shaped structure.
3. The tire of claim 1 wherein said tire core is a polymer sponge foam.
4. The tire of claim 4 wherein said tire surface includes natural rubber, polyvinyl chloride resin, and high styrene material.
5. The tire of claim 4 wherein said tire surface is 4 – 7 mm thick, and the tire ridge is 4 – 6 mm high.

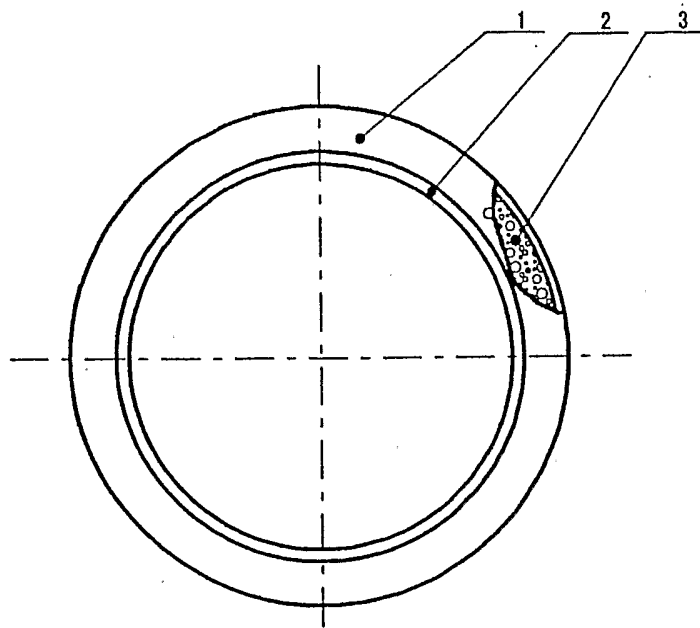


Fig. 1

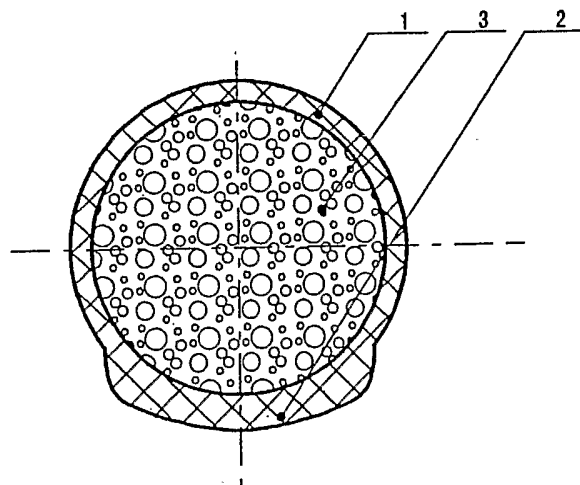


Fig. 2