

Loop Wheel Bicycle

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Abstract: A Loop wheel could also be a wheel with integral suspension, designed for higher shock-absorbing performance and bigger comfort. Loop wheels offer you with an influence tool ride. They are more leisurely than traditional wheels: the carbon springs absorb exhausting vibration, to boot as bumps and shocks. They're very sturdy and durable.

Loop wheel springs square measure created of a fabric, strictly developed to supply optimum compression and lateral stability to boot as strength and strength. Specially-designed connectors attach the springs to the hub and rim. The three loops in each wheel work on as a self-correcting system. This spring system between the hub and additionally the rim of the wheel provides suspension that constantly adjusts to uneven parcel of land – whole thing the rider from bumps and potholes at intervals the road. In effect, the hub floats at intervals the rim, adjusting constantly as shocks from associate uneven road hit the rim of the wheel. The spring configuration permits the force to be transferred smoothly between the hub and additionally the rim.

Keywords: loop wheel , spring ,suspension

I. INTRODUCTION.

A wheel is a circular component that is intended to rotate on an axle bearing. The wheel is one of the main components of the wheel and axle which is one of the six simple machines. Wheels, in conjunction with axles, allow heavy objects to be moved easily facilitating movement or transportation while supporting a load, or performing labor in machines. Wheels are also used for other purposes, such as a ship's wheel, steering wheel, potter's wheel and flywheel.

Common examples are found in transport applications. A wheel greatly reduces friction by facilitating motion by rolling together with the use of axles. In order for wheels to rotate, a moment needs to be applied to the wheel about its axis, either by way of gravity, or by the application of another

external force or torque. The invention of the wheel falls into the late Neolithic, and may be seen in conjunction with other technological advances that gave rise to the early Bronze Age. Note that this implies the passage of several wheel-less millennia even after the invention of agriculture and of pottery, during the Aceramic Neolithic (9500–6500 BCE).

- 4500–3300 BCE: Chalcolithic, invention of the potter's wheel; earliest wooden wheels (disks with a hole for the axle); earliest wheeled vehicles, domestication of the horse
- 3300–2200 BCE: Early Bronze Age
- 2200–1550 BCE: Middle Bronze Age, invention of the spoked wheel and the chariot.

Halaf culture of 6500-5100 BCE is sometimes credited with the earliest depiction of a wheeled vehicle, but that is doubtful because there's no evidence of Halafians using either wheeled vehicles or even pottery wheels.

Precursors of wheels, known as "tournettes" or "slow wheels", were known in the Middle East by the 5th millennium BCE (one of the earliest examples was discovered at Tepe Pardis, Iran, and dated to 5200-4700 BCE.) These were made of stone or clay and secured to the ground with a peg in the center, but required effort to turn. True (freely-spinning) potter's wheels were apparently in use in Mesopotamia by 3500 BCE and possibly as early as 4000 BCE,[4] and the oldest surviving example, which was found in Ur (modern day Iraq), dates to approximately 3100 BCE. Two types of early Neolithic European wheel and axle are known; a circumalpine type of wagon construction (the wheel and axle rotate together, as in Ljubljana Marshes Wheel), and that of the Baden culture in Hungary (axle does not rotate). They both are dated to c. 3200–3000 BCE.

In China, the wheel was certainly present with the adoption of the chariot in c. 1200 BCE, although

In Britain, a large wooden wheel, measuring about 1 m (3.3 ft) in diameter, was uncovered at the Must Farm site in East Anglia in 2016. The specimen, dating from 1,100–800 years BCE, represents the most complete and earliest of its type found in Britain. The wheel's hub is also present. A horse's spine found nearby suggests the wheel may have been part of a horse-drawn cart. The wheel was found in a settlement built on stilts over wetland, indicating that the settlement had some sort of link to dry land.

Although they did not develop the wheel proper, the Olmec and certain other American cultures seem to have approached it, as wheel-like worked stones have been found on objects identified as children's toys dating to about 1500 BC. It is thought that the primary obstacle to large-scale development of the wheel in the Americas was the absence of domesticated large animals which could be used to pull wheeled carriages.[citation needed] The closest relative of cattle present in Americas in pre-Columbian times, the American Bison, is difficult to domesticate and was never domesticated by Native Americans; several horse species existed until about 12,000 years ago, but ultimately became extinct. The only large animal that was domesticated in the Western hemisphere, the llama, did not spread far beyond the Andes by the time of the arrival of Columbus.

II. COMPONENTS USED.

2.1. Bicycle

A bicycle, often called a bike or cycle, is a human-powered, pedal-driven, single-track vehicle, having two wheels attached to a frame, one behind the other. A bicycle rider is called a cyclist, or bicyclist. Bicycles were introduced in the 19th century in Europe and as of 2003, more than 1 billion have been produced worldwide, twice as many as the number of automobiles that have been produced. They are the principal means of transportation in many regions. They also provide a popular form of recreation, and have been adapted for use as children's toys, general fitness, military and police applications, courier services, and bicycle racing.



2.2. Tyre

A tire or tyre is a ring-shaped covering that fits around a wheel rim to protect it and enable better vehicle performance by providing a flexible cushion that absorbs shock while keeping the wheel in close contact with the ground. The word itself may be derived from the word "tie," which refers to the outer steel ring part of a wooden cart wheel that ties the wood segments together. The fundamental materials of modern tires are synthetic rubber, natural rubber, fabric and wire, along with other compound chemicals. They consist of a tread and a body. The tread provides traction while the body ensures support. Before rubber was invented, the first versions of tires were simply bands of metal that fitted around wooden wheels to prevent wear and tear. Today, the vast majority of tires are pneumatic inflatable structures, comprising a doughnut-shaped body of cords and wires encased in rubber and generally filled with compressed air to form an inflatable cushion. Pneumatic tires are used on many types of vehicles, such as cars, bicycles, motorcycles, trucks, earthmovers, and aircraft.



2.3. Wheel Rim

The rim is commonly a metal extrusion that is butted into itself to form a hoop, though may also be a structure of carbon fiber composite, and was historically made of wood. Some wheels use both an aerodynamic carbon hoop bonded to an aluminum rim on which to mount conventional bicycle tires. A bicycle wheel is a wheel, most commonly a wire wheel, designed for a bicycle. A pair is often called a wheel set, especially in the context of ready built "off the shelf" performance-oriented wheels. Bicycle wheels are typically designed to fit into the frame and fork via dropouts, and hold bicycle tires.



2.4. Leaf Spring/Loop Spring

A leaf spring is a simple form of spring commonly used for the suspension in wheeled vehicles. Originally called a laminated or carriage spring, and sometimes referred to as a semi-elliptical spring or cart spring, it is one of the oldest forms of springing, dating back to medieval times. A leaf spring can either be attached directly to the frame at both ends or attached directly at one end, usually the front, with the other end attached through a shackle, a short swinging arm. The shackle takes up the tendency of the leaf spring to elongate when compressed and thus makes for softer springiness. Some springs terminated in a concave end, called a spoon end (seldom used now), to carry a swiveling member.



2.5. Triangular Wheel Hub

A Triangular hub is the center part of a bicycle wheel. It consists of an axle, bearings and a hub shell. Hub shells can be one-piece with press-in cartridge or free bearings or, in the case of older designs, the flanges may be affixed to a separate hub shell. The hub is the center of the wheel, and typically houses a bearing, and is where the axle is mounted inside it. A hub less wheel (also known as a rim-rider or center less wheel) is a type of wheel with no center hub. More specifically, the hub is actually almost as big as the wheel itself. The axle is hollow, following the wheel at very close tolerances. Triangular faces in outer sides are provided to rest leaf springs on it.



III. ADVANTAGES.

- 1) Better shock-absorbing performance.
- 2) Greater comfort.
- 3) Smoother ride.
- 4) More comfortable than standard wheels.
- 5) They are extremely strong.

IV. DISADVANTAGES.

1) Manufacturing of hub costly.

V. CONCLUSION.

After successful development of manufacturing process for very durable yet light weight filamentary composite Loop-wheels, their successful demonstration in a small scale. To share this technology with interested licenses there is wide range of opportunities from low cost agricultural to most demanding high mobility applications which can take advantage of loop-wheel's potential as a smooth running, light weight mobility concept with integral spring suspension, large foot print and excellent obstacles negotiation..

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