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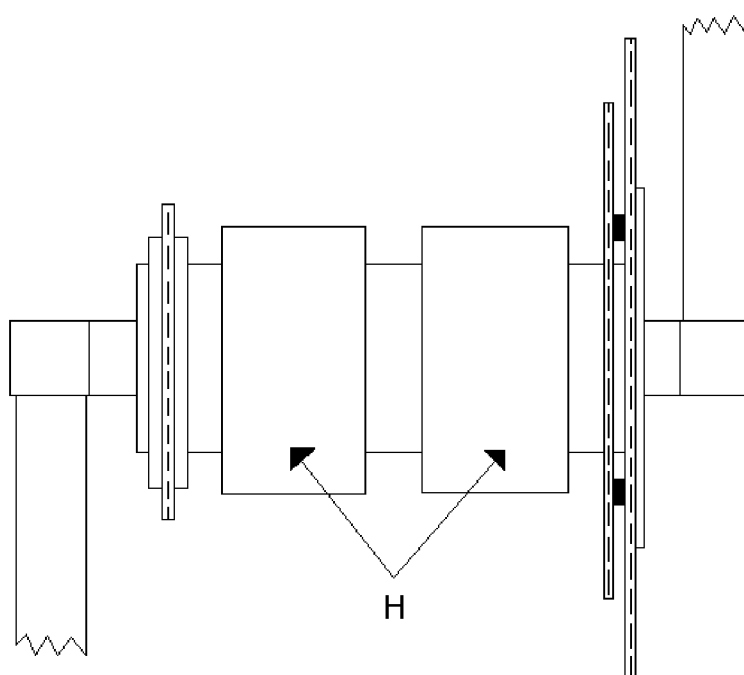
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(54) Title: BICYCLE MULTI SPINDLE



(57) Abstract: A multi spindle device is in the centre of the spindle hub, diverting whatever the greater torque pedalling and or motor into the gear system of the conventional bicycle. The two powers will come from pedalling and or the motor and it will go through the middle tubular spindle into the gear system of the bicycle.

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Description

In the market of motor and pedal powered bicycles, the concept of achieving additional torque in the pedal spindle system, from a motor and or pedal, jointly or separately with the existing gear system has never been used.

Most conventional motor driven bicycles use the motor power directly to the wheel and the pedal power separately to the wheel. In this invention both powers will compliment each other and give a better output. The motor and pedal power joins in the crank of the bicycle to allow the usage of the gear system.

A specific embodiment of the invention will be described by way of example with reference to the accompanying drawings in which:

Figure 1 shows the centre spindle (A) with the pedal arms (B) connected

Figure 2 shows the centre spindle (A) with the one way bearings (C) fixed

Figure 3 shows the middle hallow spindle (D) fitted on to the one way bearings (C),

Figure 4 shows cross section of figure 3

Figure 5 shows (E) the cogwheels fitted to the middle spindle, (E) the cogwheels will drive the main object, (F) the cogwheel is fitted to a one way bearing (G) which is fitted to the middle hollow spindle (D).

Figure 6 shows figure 5 fitted with two way bearing (H)

Figure 7 shows the bearing of figure 6 covered by a tube (I) which has a thread on the outside (J) so that it can be screwed in to the housing of the vehicle.

Description:

Bicycle multi spindle operates as follows:

The main objective is to allow both energies to power the gears simultaneously or independently without loss of energy.

Figures 1 to 7 are illustrative of how this mechanism works.

In figure 1 (A) is a spindle and has the 2 pedal arms (B) connected.

On the (A) spindle there will be one or more one-way bearings fitted as in figure 2. The (A) spindle and the inner of the one-way bearing (C) will have grooves to stop slipping, (C) the one-way bearing will connect to (D) the middle hollow spindle.

In the inside of the hollow spindle (D) and the outside of the one-way bearing (C) there will be grooves to prevent slipping.

(D) is the middle hollow spindle which gives out the greater torque to drive the chain and eventually the wheel.

On the hollow spindle (D) there will be a one-way bearing (G) fixed which will have a cogwheel (F) fitted on to the one way bearing.

On the inner side of the one-way bearing (G) and the outer side of the hollow spindle (D) will have grooves to prevent slipping also the outer side of the one way bearing (G) and the inner side of the cogwheel (F) will have grooves to prevent slipping.

(F) the cogwheel will be driven from a motor. When the motor is not turning or is slower than the spindle (D) it will just free wheel.

On the hollow spindle (D) there are cogwheels (E) this is where the torque will be transmitted. Cogwheels (E) will be fixed to (D) the hollow spindle.

On the hollow spindle (D) there will be one or more bearings fitted, such as bearings (H). This is to free the total mechanism from the frame of the bicycle. The outer of the bearing can also be fitted to the hub of the bicycle but for this example we show it as in figure 7 with an outer tube (I) fitted to the bearing (H). Also in the outer tube (I) there will be a thread on the outside, so that it can be screwed to the bicycle frame hub and locked.

The two torques will come from pedalling and or the motor then go via the middle hollow spindle and then eventually to the gear system of the bicycle. The middle hollow spindle will be powered by whatever is the greater torque or an equal torque.

Claims

1. A spindle mechanism substantially as described herein and illustrated in the accompanying drawings.
2. A multi spindle device in the centre of the pedals hub which has a input drive at one end of the multi spindle device and the other end has the output which drives directly into the exciting gears of the bicycle, without having any other additional driving systems.
3. A multi spindle device in the centre of a bicycle hub connecting a external drive input toque via a concentric tubular shaft at one end and the other end connected to the end drive. The toque from the center spindle is available when additional toque is required via the concentric tubular shaft.

fig: 1

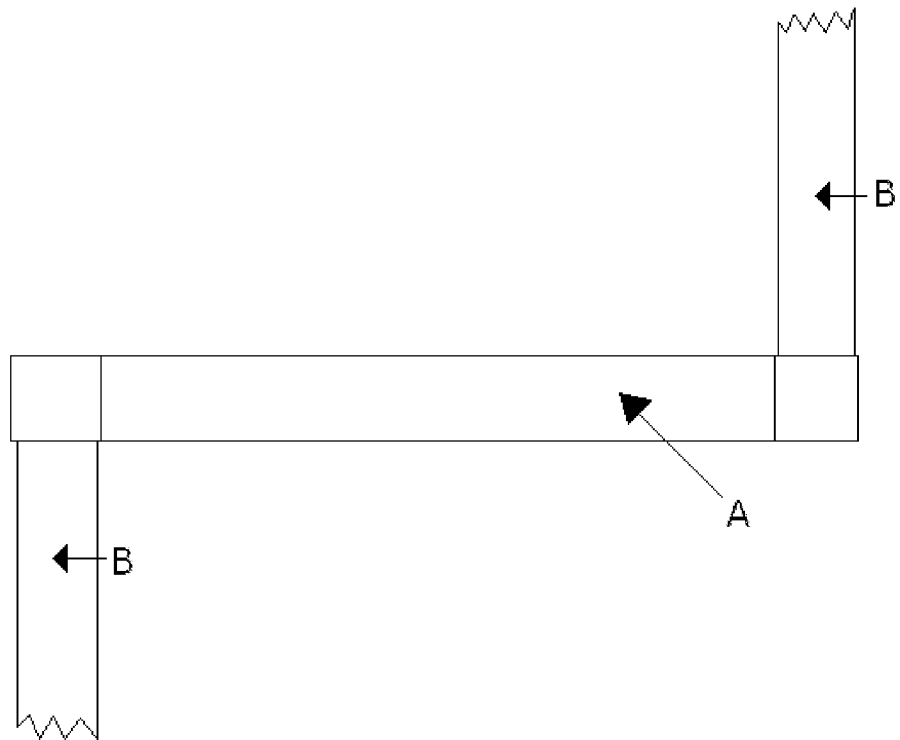


fig: 2

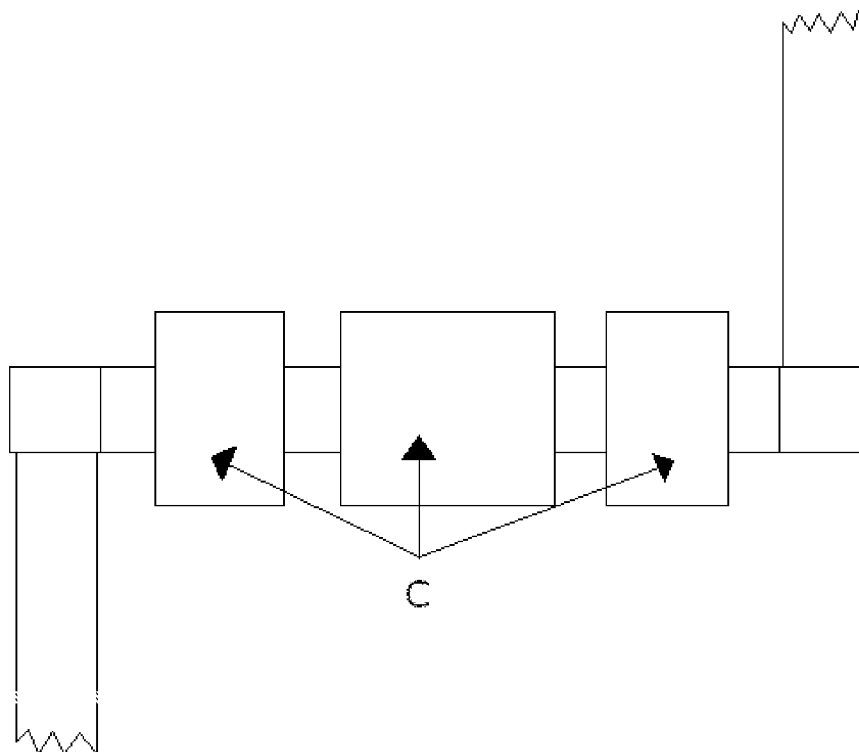


Fig:3

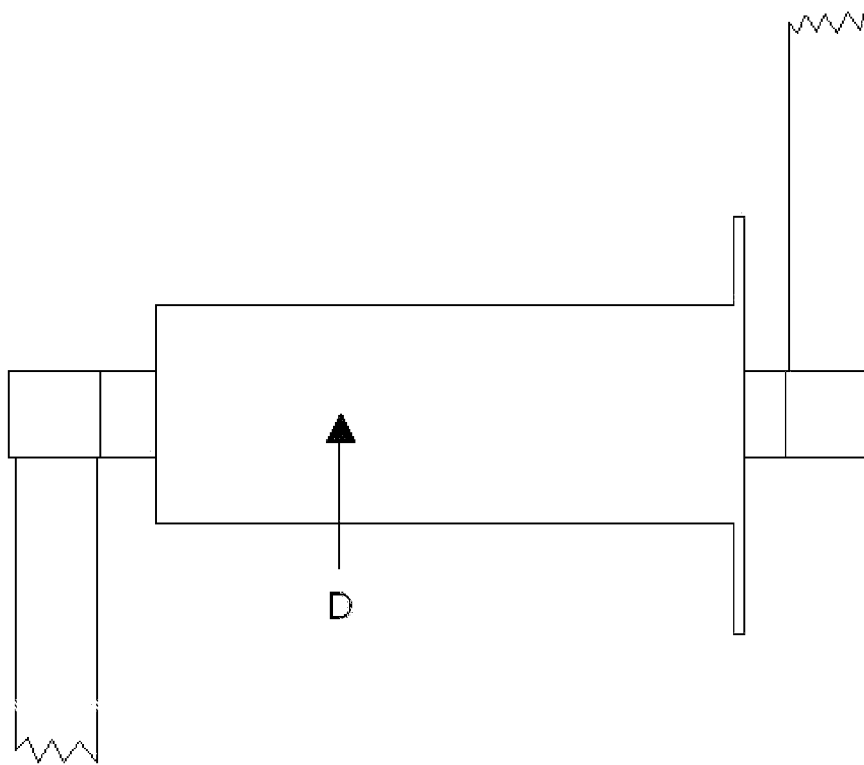


Fig: 4

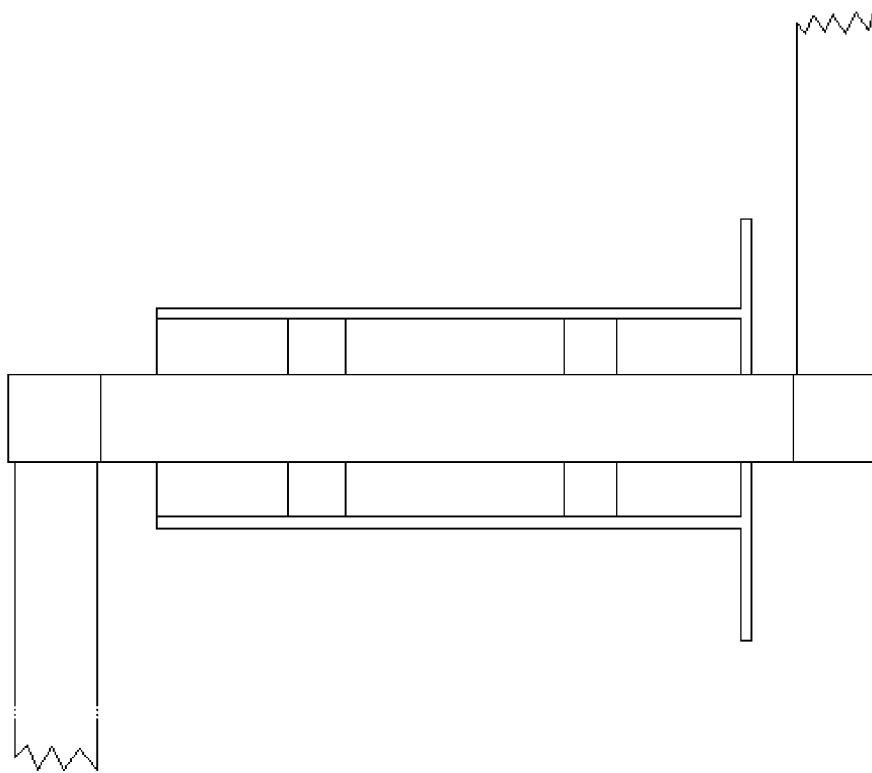


Fig: 5

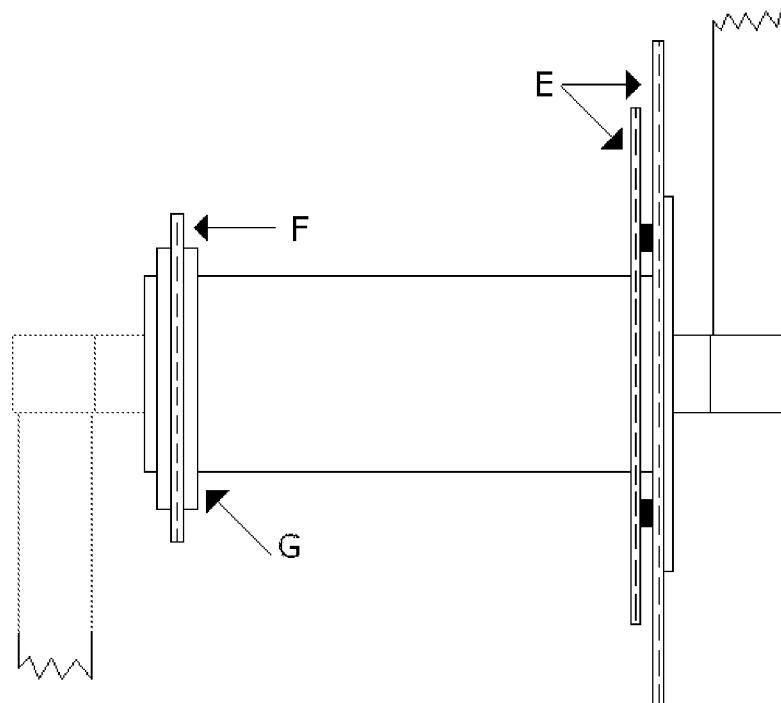


Fig: 6

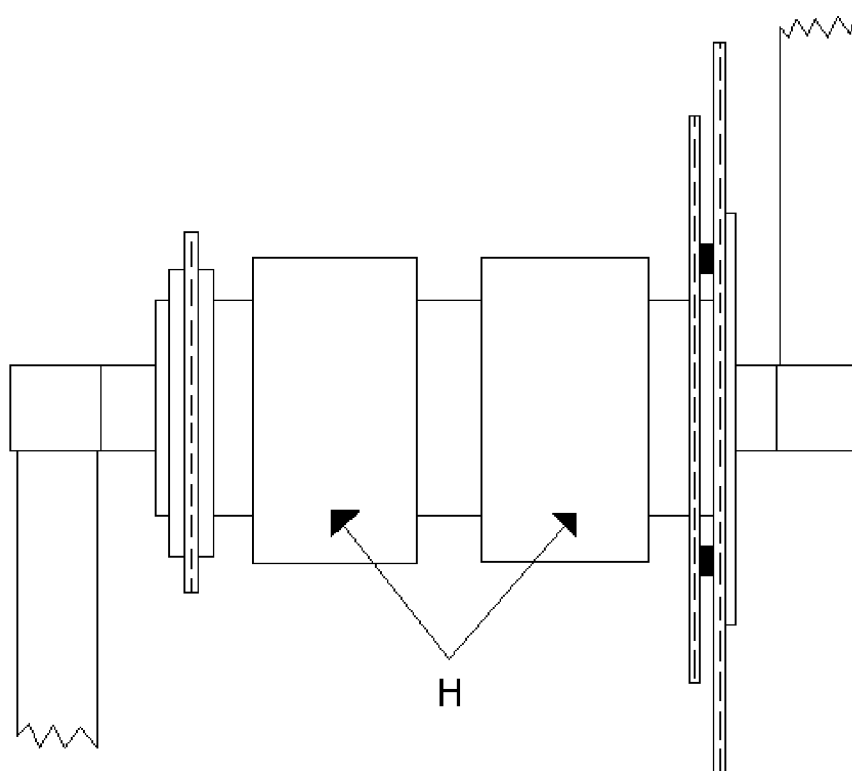


Fig: 7

