No. 684,997. Patented Oct. 22, 1901.

R. A. MATHESON.

SPRING HUB.

(Application filed Dec. 26, 1900.)

(No Model.)

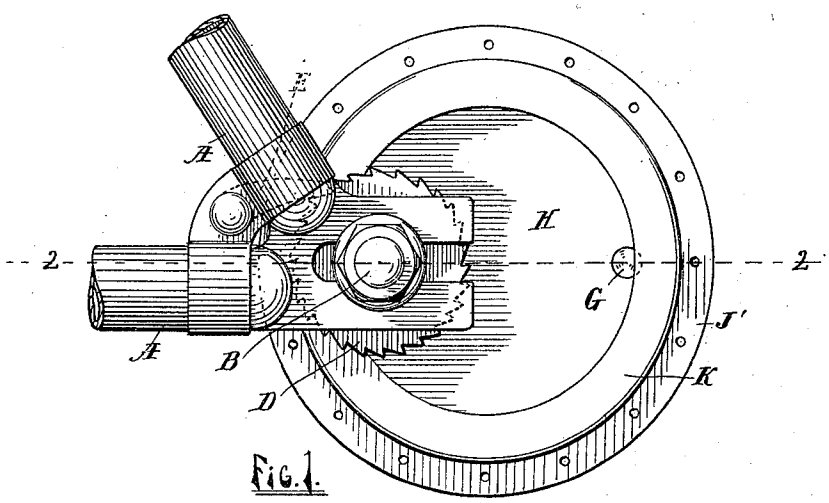

Fig. 1.

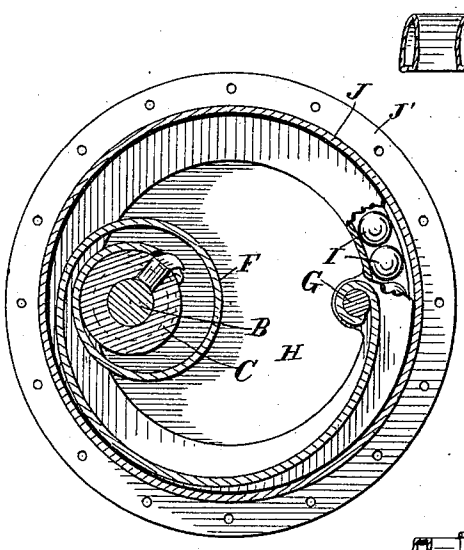

Fig. 3.

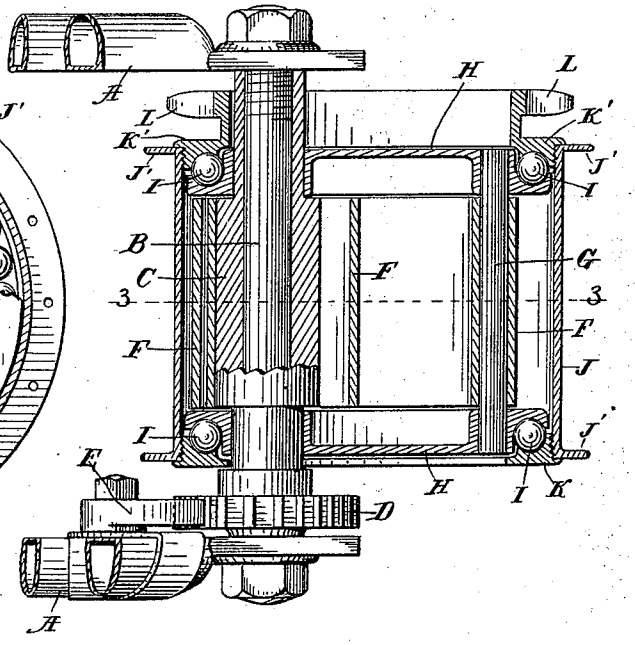

Fig. 2.

Witnesses
Palmer A. Jones
George Holway

Inventor
Robert A. Matheson
By Luther V. Moulton
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ROBERT A. MATHESON, OF GRAND RAPIDS, MICHIGAN.

SPRING-HUB.

SPECIFICATION forming part of Letters Patent No. 684,997, dated October 22, 1901.

Application filed December 26, 1900. Serial No. 41,179. (No model.)

To all whom it may concern:

Be it known that I, ROBERT A. MATHESON, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Spring-Hubs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in spring-hubs for vehicles, and more particularly to such hubs for bicycles; and its object is to provide the same with certain new and useful features hereinafter more fully described, and particularly pointed out in the claims.

My device consists, essentially, of a tubular hub rotative upon heads mounted upon an axis eccentric to the axis of the hub and yieldingly held by a spring, whereby the axis of the hub will move vertically about the axis of the heads as the spring yields, and in certain details of construction and arrangement of parts, as will more fully appear by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a device embodying my invention; Fig. 2, a horizontal section of the same on the line 2 2 of Fig 1, and Fig. 3 a vertical section of the same on the line 3 3 of Fig. 2.

Like letters refer to like parts in all the figures.

A represents a rear portion of a bicycle-frame, and B the axis-bolt of the same as usually constructed. C is a sleeve rotative on the bolt B. This sleeve is adjusted and held by means of a ratchet D, fixed on one end of the sleeve and engaged by a pawl E, attached to the frame, this adjustment being for the purpose of adjusting the tension of the spring F. This spring is attached to the sleeve C at one end and to a rod G at the other end, which rod is supported in heads H, eccentrically journaled on the sleeve C. In the periphery of these heads H are ball-bearings I, with which are engaged rotative bearing-rings K and K'. To the ring K' is attached a sprocket-ring L for driving the hub. Supported by the bearing-rings and attached thereto is a tube J, having spoke-flanges J' at each end and constituting the hub proper. This tube J, together with the bearing-rings K and K', rotates freely around the axis of the heads H H, which heads are yieldingly held from turning on the sleeve C by means of the spring F. The axis of the heads thus vibrates in an arc having a vertical chord, the spring yieldingly supporting the load. To adapt the tension of the spring to the various loads, the sleeve is adjusted by applying a spanner to the ratchet-wheel D and adjusting the engagement of the pawl E therewith.

It is obvious that this device may be readily adapted to wheels of automobiles, carriages, or other vehicles by providing a suitable axial opening in the sleeve C to fit the axle of the vehicle and attaching the pawl at a suitable place to engage and hold the ratchet-wheel.

From the foregoing the operation of my device is obvious without further description.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of heads eccentrically journaled on a fixed axis, a spring attached thereto at one end, and to a fixed support at the other end, and a hub rotative on the heads, substantially as described.

2. The combination of an angularly-adjustable sleeve, heads having eccentric bearings on the sleeve, a spring connected to the sleeve and heads, and a hub rotative on the heads, substantially as described.

3. The combination of an angularly-adjustable sleeve, heads having eccentric bearings on the sleeve, a spring attached to the sleeve and heads, ball-bearings in the peripheries of the heads, ring-bearings engaging the ball-bearings, and a tube supported by the ring-bearings and having spoke-flanges, substantially as described.

4. In combination with the frame and the fixed axis-bolt of a bicycle, a sleeve adjustable about the axis of the bolt, a ratchet-wheel fixed on the sleeve, a pawl attached to the frame and engaging the ratchet-wheel, heads eccentrically journaled on the sleeve, a hub rotative on the heads, and a spring connecting the sleeve and heads, substantially as described.

5. In a bicycle, the combination of heads

eccentrically journaled in the frame, a spring between the heads connected to the frame at one end and to the heads at the other end, ball-bearings in the peripheries of the heads, bearing-rings engaging the ball-bearings, and a tube having spoke-flanges and attached to the rings and rotatively supported thereby, substantially as described.

6. In a bicycle, in combination with the frame and axis-bolt, a sleeve adjustable about the axis of said bolt, a ratchet-wheel fixed on the sleeve, a pawl on the frame and engaging said wheel, heads having eccentric bearings on the sleeve, a spring attached to the sleeve at one end and to the heads at the other end, ball-bearings in the peripheries of the heads, rings engaging the bearings, a sprocket-ring attached to one of the rings, and a tube having spoke-flanges at its ends and attached to the rings, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT A. MATHESON.

Witnesses:
LUTHER V. MOULTON,
PALMER A. JONES.