No. 614,669. Patented Nov. 22, 1898.

W. D. SNIDER & A. G. SNOW.

HUB FOR VEHICLES.

(Application filed Dec. 29, 1896.)

(No Model.)

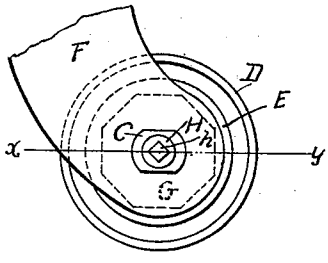


Fig. 2.

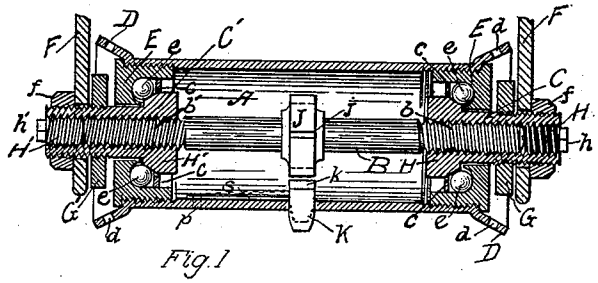


Fig. 1.

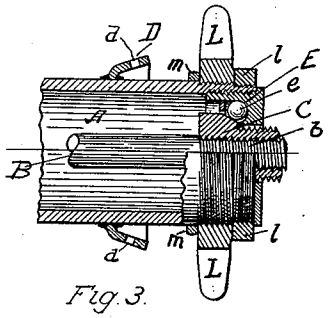


Fig. 3.

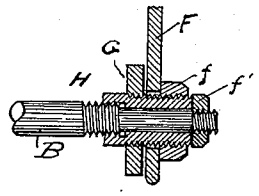


Fig. 4.

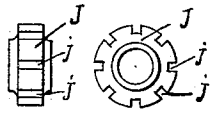


Fig. 5.

Fig. 6.

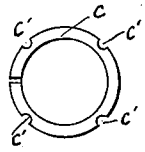


Fig. 7.

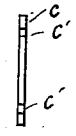


Fig. 8.

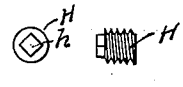


Fig. 9. Fig. 10.

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UNITED STATES PATENT OFFICE.

WALTER D. SNIDER AND ALBERT G. SNOW, OF SCRANTON, PENNSYLVANIA.

HUB FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 614,669, dated November 22, 1898.

Application filed December 29, 1896. Serial No. 617,367. (No model.)

To all whom it may concern:

Be it known that we, WALTER D. SNIDER and ALBERT G. SNOW, citizens of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Hubs for Vehicles; and we 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Our invention relates to that class of hubs in which antifriction-balls are used for the bearings and which are generally suitable for use upon bicycles and similar vehicles.

The objects of the invention are to provide a hub in which the bearings may be adjusted without interfering with the attachment of the hub to the vehicle-frame or fork of the bicycle in which it is used and to provide a simplified construction and a hub which may be properly adjusted and afterward sold and handled and attached to a bicycle-frame without interference with the adjustment given to it by the workman who made it. We attain these objects by means of the construction, arrangement, and combination of the several parts, as herein set forth, and illustrated in the accompanying drawings, forming a part of this specification.

In the drawings, Figure 1 shows a view taken partly in cross-section on the line *x y* of Fig. 2. Fig. 2 shows an end view of one of our hubs when it is attached to a bicycle-fork, the retaining-nut being removed. Fig. 3 is a view, partly in cross-section, of one end of our hubs with a sprocket-wheel attached thereto. Fig. 4 shows a substitute method of locking the adjustment. Fig. 5 shows one of the details of the central shaft of the hub. Fig. 6 is a view, taken at right angles to that of Fig. 5, of the same detail. Fig. 7 shows a broadside view of one of our rings for retaining antifriction-balls in the bearing-cups. Fig. 8 is an edge view of the same ring shown in Fig. 7. Fig. 9 is an end view of a plug or set-screw used to set the cones on the shaft when they have been properly adjusted. Fig. 10 is a side view of the set-screw shown in Fig. 9.

In the figures, A designates the barrel or main portion of the hub, and B the shaft or axle of the hub, to which the cones C C′ are attached by right and left hand threads *b b′*, respectively. The barrel A is provided at each end with a flaring flange D, having holes *d d*, &c., to which the spokes are to be attached. Each end of said barrel is also internally screw-threaded in order to receive the screw-threaded bearing-cups E E, which are exactly alike. The antifriction-balls *e e*, &c., are retained in the cups E E by means of retaining-rings *c c*, which are sprung so as to fit snugly within the flanges of the cups E E in such position that the balls may come in contact with the shoulders of the cones C C′ without touching the said rings. These rings are also provided with milled notches *c′ c′*, &c., which serve as openings through which the oil used in lubrication may gain access to the balls. The cones C C′ are fitted with nuts G G′, respectively, which nuts are adapted to serve as shoulders against which the ends of the fork F may be screwed tightly by means of the nuts *f f*. By this means the cones are securely fastened or locked to the forks of the frame independently of their attachment or relation to the shaft B, which may spread or draw them together by springing the forks. The cone C is internally screw-threaded with a right-hand thread; but if the substitute form shown in Fig. 4 is used the internal thread extends only partially through the cone from the inner side and the shaft or axle is threaded accordingly, the outer part being left plain except the tip, which is threaded to accommodate the small jam-nut *f′*, and the plug H, having a square head *h*, by means of which it is adapted to be turned with a wrench, is used as a set-screw, so that when the cone C is screwed onto the threaded end *b* of the axle B and adjusted to the proper distance from the end the cone may be secured in that position by tightening up the plug or set-screw H or the nut *f′*. The cone C′ is likewise internally screw-threaded, but with a left-hand thread, and is likewise screwed onto the left-threaded end *b′* of the axle, and the cone C′ is likewise secured in its adjustment by means of a set-screw, also left threaded and designated H′, also having the square head *h′*. The middle of the axle B is provided with a

milled or notched collar J, provided with notches *j j*, which is preferably soldered thereto. By means of this collar the shaft B may be made to revolve with the barrel of the hub by locking the barrel of the hub to it, and this locking is accomplished by means of the dog K, having a tooth *k*, which is adapted to fit into the notches *j j* on the collar J. This dog is preferably cylindrical in form and extends outward through a hole in the barrel A, so that it may be pressed into engagement by means of the thumb or finger. It is also rigidly attached to a flat spring *s*, having one of its ends secured to the inside of the barrel of the hub by a rivet *p*.

When it is desired to attach a sprocket-wheel to our hub, the barrel A is made to extend beyond the flange D, as shown in Fig. 3, and a collar *m* soldered to the extension to form a shoulder against which the sprocket-wheel L may be screwed. The sprocket L is secured to the barrel further by means of a lock nut or ring *l*, left threaded and screwed snugly against the said sprocket.

The operation of our device is now readily explained. Antifriction-balls having been placed in the cups E E, one of the said cups is screwed into the end of the barrel solidly. Then the shaft B, having the cones C C′ screwed onto its ends, is inserted into the barrel from the end in which no cup is yet screwed, and the threaded end of one of the cones is projected out through the central hole of the bearing-cup until the bearing-surface of the cone comes in contact with the friction-balls *e* of the inserted cup. The other cup is then screwed into the opposite end of the barrel A, allowing the threaded portion of the other cone to extend out through the central opening in it. On the threaded ends of the cones the nuts G G′ are then screwed tightly, after which the hub may be placed into the bicycle fork, the parts of which are designated F F, to which they may then be tightly secured by screwing on the nuts *f f*. The cones C C′ are kept from turning in the bicycle-fork, preferably by means of two flat sides, as shown in Fig. 2, so that by revolving the shaft B when the cones are thus held the said cones are driven outwardly or drawn inwardly of the hub, according to the direction in which the said shaft is turned, the threaded ends *b b′* being provided, respectively, with right and left threads. The revolution of the shaft or axle B is effected by pressing inwardly with the thumb or finger on the dog K, thus bending the spring *s* so that the tooth *k* engages in one of the notches *j* of the collar J of the shaft, thus locking the barrel A to the shaft, so that the shaft may be revolved with the barrel of the hub in either direction required. When the cones are adjusted in this manner to the positions required, the plugs H H′ are screwed into the respective ends of the cones C C′ until they set against the respective ends of the shaft B firmly enough to prevent the shaft from turning in the cones, or the small jam-nut *f′* is tightened up if the substitute form is used. This adjustment may all be effected before the hub is inserted into the vehicle; but when it is thus done it is evident that the cones should be held from revolving by an appliance which would take the place of the fork of the bicycle to which the hub is adapted to be attached. In separating the hub it is evident that the reverse operation to that just described is all that is necessary, and in separating the cups E E the antifriction-balls are held in their places by the retaining-rings *c c*, so that these parts may be handled without the ordinary annoyance of scattering and losing the antifriction-balls.

The flanges D D by flaring outward assist in protecting the parts from the dust and conduce to neatness and strength.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

In a hub of the kind described the cone C threaded inwardly and fitted with the threaded axle B the said cone being provided with an outward-threaded shank non-circular in section and fitted with the nut G, and nut *f*, whereby the said shank is adapted to be attached to the vehicle-frame for the purpose set forth, substantially as specified.

In testimony whereof we affix our signatures in presence of two witnesses.

WALTER D. SNIDER.
ALBERT G. SNOW.

Witnesses:
EDITH SCHWEISS,
LULU M. CHURCHILL.