(No Model.)

G. A. SKARIN.

WHEEL HUB.

No. 605,208. Patented June 7, 1898.

Fig. 1.

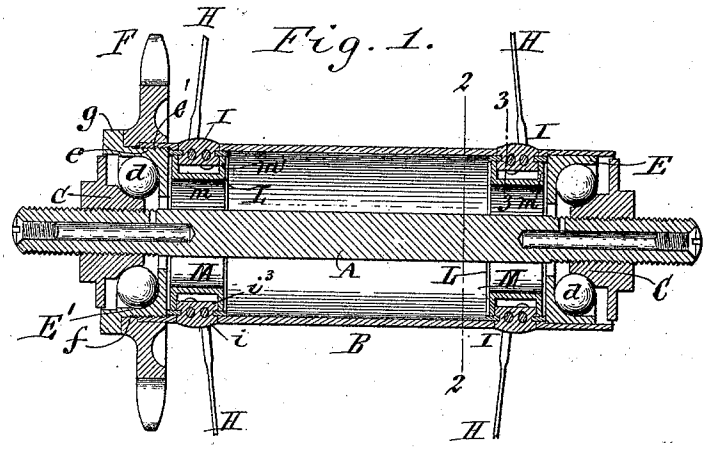


Fig. 2.

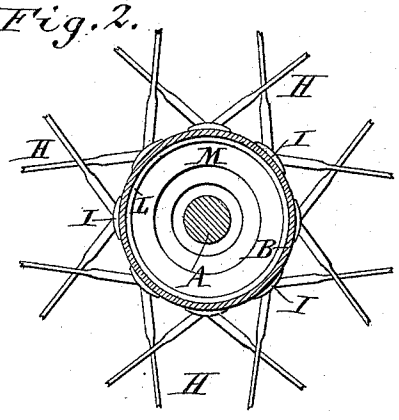


Fig. 3.

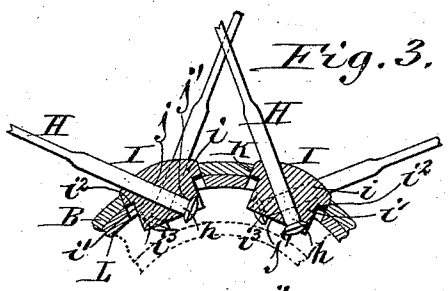


Fig. 4.

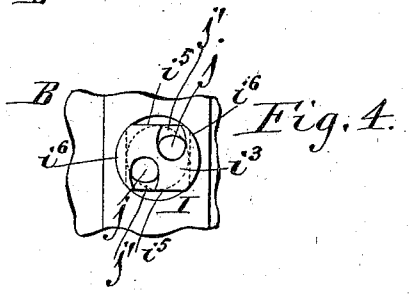


Fig. 5.

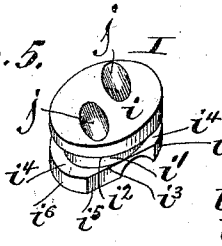


Fig. 7.

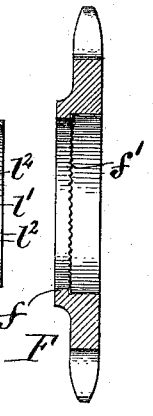


Fig. 6.

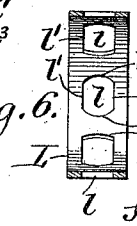


Fig. 8.

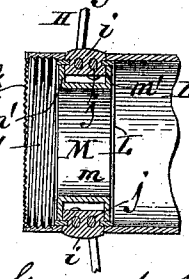
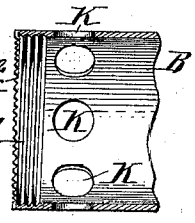


Fig. 9.



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UNITED STATES PATENT OFFICE.

GUSTAF A. SKARIN, OF BUFFALO, NEW YORK.

WHEEL-HUB.

SPECIFICATION forming part of Letters Patent No. 605,208, dated June 7, 1898.

Application filed July 16, 1897. Serial No. 644,763. (No model.)

To all whom it may concern:

Be it known that I, GUSTAF A. SKARIN, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Wheel-Hubs, of which the following is a specification.

This invention relates to wheel-hubs, and more especially to hubs for bicycle-wheels, in which the barrel or shell is made from metal tubing.

My invention has the objects to improve the means for fastening the spokes to the tubular barrel or shell and also to simplify the means of securing the sprocket-wheel thereto.

In the accompanying drawings, Figure 1 is a longitudinal section of a bicycle-wheel hub provided with my improvements. Fig. 2 is a transverse section in line 2 2, Fig. 1. Fig. 3 is a fragmentary transverse section, on an enlarged scale, in line 3 3, Fig. 1, showing the spoke-fastening. Fig. 4 is a fragmentary inside view of the same. Fig. 5 is a perspective view of one of the spoke-fastening buttons or nipples. Fig. 6 is a detached sectional elevation of the button or nipple locking ring. Fig. 7 is a detached sectional view of the sprocket-wheel. Fig. 8 is a fragmentary longitudinal section of the hub-barrel and spoke-fastenings. Fig. 9 is a detached fragmentary sectional elevation of the hub-barrel.

Like letters of reference refer to like parts in the several figures.

A is the axle, provided with externally-screw-threaded ends, and B is the tubular barrel or shell, which is preferably cylindrical throughout its whole length.

C C represent the internally-screw-threaded bearing cones or races, which are mounted on the externally-threaded ends of the axle, *d d* the annular rows of balls, bearing with their outer sides against the cones, and E E′ the bearing cups or races, which bear against the inner sides of the rows of balls and which are mounted in the ends of the barrel. The bearing-cup E is preferably secured into the barrel by a driving fit, while the other bearing-cup E′ is secured to the barrel by an external screw-thread *e*, formed on the inner portion of this cup and engaging with an internal screw-thread *e′* in the adjacent end of the barrel.

F represents a sprocket-wheel mounted on the outer side of that end of the barrel in which the bearing-cup E′ is secured. The sprocket-wheel is provided at its outer end with an inwardly-projecting flange *f*, forming an inwardly-facing shoulder, which bears against the adjacent end of the barrel.

g represents an outwardly-projecting annular flange which is formed on the outer end of the bearing-cup E′ and which bears against the outer side of the sprocket-wheel. Upon screwing the bearing-cup E′ inward tightly its flange *g* presses the flange *f* of the sprocket-wheel firmly against the outer end of the barrel, thereby securing the sprocket-wheel to the barrel. In order to positively prevent the sprocket-wheel from turning on the barrel, the shoulder on the flange of the sprocket-wheel is provided with an annular row of radial serrations or teeth *f′*, which interlock with similar serrations or teeth f^2 on the opposing end of the barrel.

H represents the spokes, which are secured tangentially to the barrel by the following means:

I I represent two annular sets of coupling buttons or nipples whereby the spokes are connected with the barrel. Each of these buttons consists of an outer cylindrical head *i*, a contracted cylindrical neck *i′*, projecting inwardly from the head and forming an annular inwardly-facing shoulder i^2 on the latter, and an elongated cross-piece i^3, arranged on the lower end of the neck and forming two outwardly-facing shoulders i^4 on opposite sides of the neck. The longitudinal sides i^5 of the cross-piece are straight and parallel, and the ends i^6 thereof are rounded concentrically and on the same radius as the head of the button.

The spokes on each end of the hub are arranged in pairs, the spokes of each pair crossing each other at their adjacent inner ends and extending tangentially outward in opposite directions. Each of the buttons serves to fasten a pair of spokes to the barrel and is provided with two eyes or openings *j j*, which

extend from the outer to the inner side of the button and diagonally in opposite directions. These eyes or openings receive the inner ends of a pair of spokes and are provided with enlargements at their inner ends, forming shoulders j' j', against which the heads h at the inner ends of the spokes bear.

K K represent two annular sets of cylindrical openings or sockets which are formed in the barrel near opposite ends thereof and into each of which the cylindrical head of one of the buttons is fitted.

L L represent two locking rings or washers whereby the spoke-buttons are held in the openings of the barrel and which are fitted against the inner side of the barrel in line with the two sets of button-openings. These rings are equal in thickness to the length of the neck on the buttons, and each ring is provided with a set of elongated openings or slots l, which register with the openings in the barrel. These slots are of the same shape as the cross-pieces on the spoke-buttons, the longitudinal sides l' thereof being straight and parallel, while the ends l^2 thereof are curved concentric with the cross-pieces and heads of the buttons. After the spokes have been attached to the buttons each of the latter is placed with its cross-bar in alinement with a slot in the locking-ring, after which the button is passed through the adjacent opening and slot of the barrel and ring until the head of the button is arranged in the opening of the barrel and rests with its shoulder on the outer side of the locking-ring and the cross-piece has passed through the slot in the cross-piece and beyond the inner side thereof. Upon turning the button one-quarter of a rotation when in this position the ends of its cross-piece are carried underneath the locking-ring and the cross-piece bridges the narrow portion of the slot, as shown in Figs. 1, 4, and 7. After the button has been turned into this position the outer ends of the spokes connected therewith are fastened to the rim of the wheel, thereby preventing the button from becoming detached from the barrel. The spoke-head is preferably convex on its outer side, and it is of such height that the marginal outer edge of the head is flush with the outer side of the barrel, thereby preventing dirt from lodging on the surface of the barrel and permitting the same to be cleaned more easily than when the spoke-attaching nipples or buttons project a considerable distance from the barrel.

In order to prevent any dirt or dust which may pass between the buttons, spokes, barrel, and ring from reaching the bearings, two dust-guards M M are provided, which cover the inner ends of the slots and the spoke-buttons. Each of these guards has the form of an annular outwardly-opening trough and consists of a ring m, arranged opposite one set of spoke-buttons, and two annular flanges m', formed on the margin of the ring and bearing against the inner side of one of the locking-rings on opposite sides of the buttons connected therewith.

In assembling the spoke-fastening devices the locking-rings are first placed in line with the openings in the barrel and the dust-guards are placed inside of the locking-rings, after which the spoke-buttons are inserted from the outside and secured in place.

I claim as my invention—

1. The combination with the barrel, of a sprocket-wheel mounted on said barrel and provided with an inwardly-projecting annular flange which bears against the end of the barrel, and a bearing-cup connected with the barrel and provided with an outwardly-projecting flange which bears against the outer end of the sprocket-wheel, substantially as set forth.

2. The combination with the barrel provided at one end with serrations, of a sprocket-wheel mounted on said barrel and provided with an internal annular flange having serrations which engage with the serrations of the barrel, and a bearing-cup having a screw connection with the barrel and provided with an external annular flange which bears against the outer end of the sprocket-wheel, substantially as set forth.

3. The combination with the hub-barrel having an opening in its wall, of a locking-washer arranged in the barrel and having an oblong opening which is narrower than said barrel-opening and which coincides therewith, and a spoke-fastening button rotatably seated in said coinciding openings and having an oblong inner portion which is constructed to pass through the oblong opening of the locking-washer when turned in line therewith and which interlocks with the washer when turned out of line with said oblong opening, substantially as set forth.

4. The combination with the hub-barrel provided with openings, of spoke-fastening buttons arranged in said openings and connected with spokes, each of said buttons being provided with a contracted portion forming inwardly and outwardly facing shoulders, and a locking device arranged in said barrel and engaging with said buttons between the shoulders thereof, substantially as set forth.

5. The combination with the hub-barrel provided with circular openings, of a locking-ring arranged in said barrel and provided with slots arranged in line with said openings, and spoke-fastening buttons each of which is provided with a circular head which fits into one of said openings, a cross-bar bearing against the inner side of the locking-ring on opposite sides of the adjacent slot and a contracted neck arranged in said slot and connecting the head and cross-piece, substantially as set forth.

6. The combination with the hub-barrel pro-

vided with openings, of spoke-fastening buttons arranged in said openings, a locking-ring arranged in the barrel and engaging with the inner ends of the buttons, and a dust-guard consisting of a ring and two outwardly-projecting annular flanges which bear against the inner side of the locking-ring on opposite sides of the buttons, substantially as set forth.

Witness my hand this 12th day of July, 1897.

GUSTAF A. SKARIN.

Witnesses:

THEO. L. POPP,

E. R. DEAN.