No. 682,897. Patented Sept. 17, 1901.

J. P. WULFF.

HUB.

(Application filed Dec. 3, 1900.)

(No Model.)

Fig. 1.

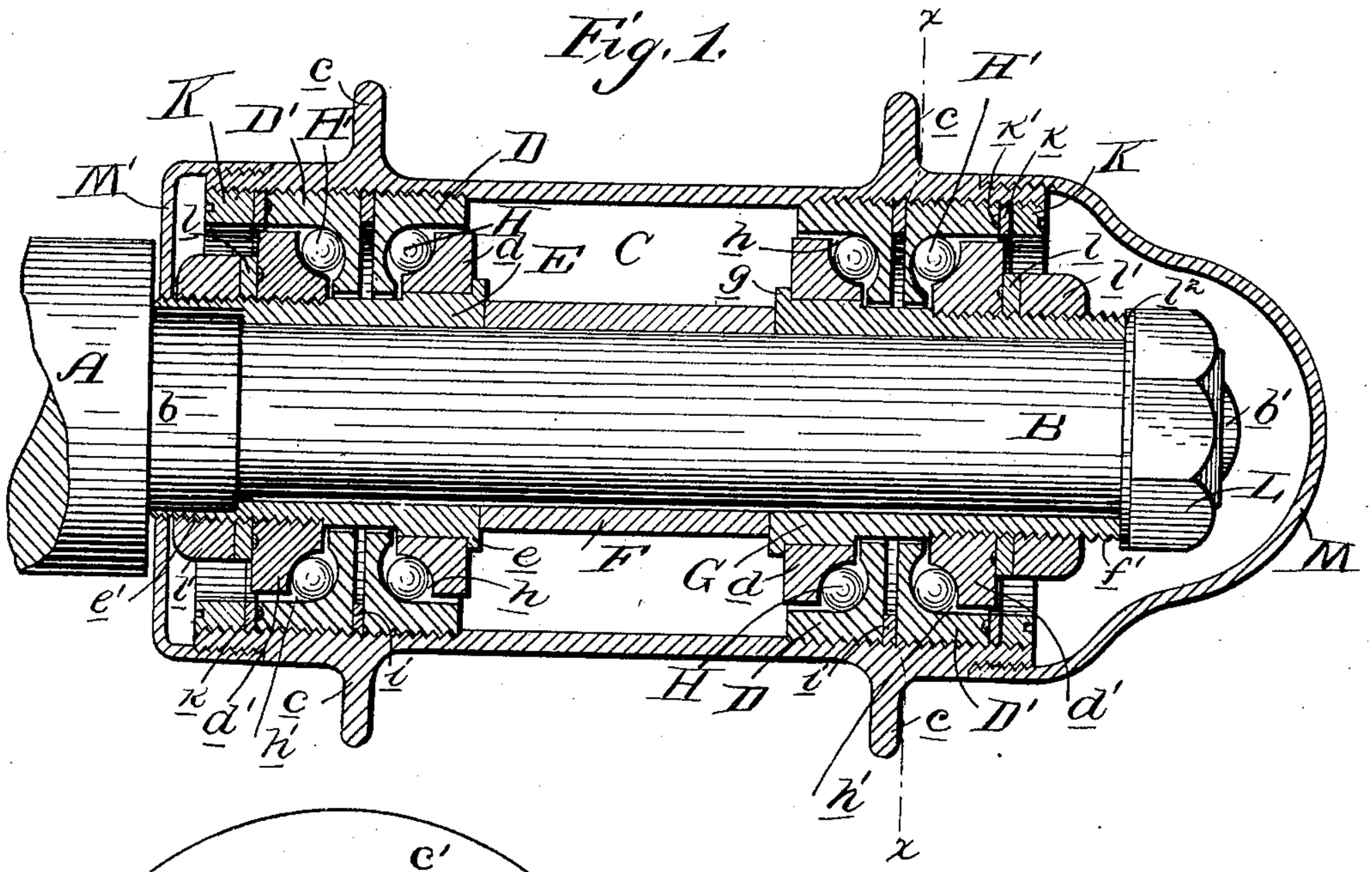


Fig. 2.

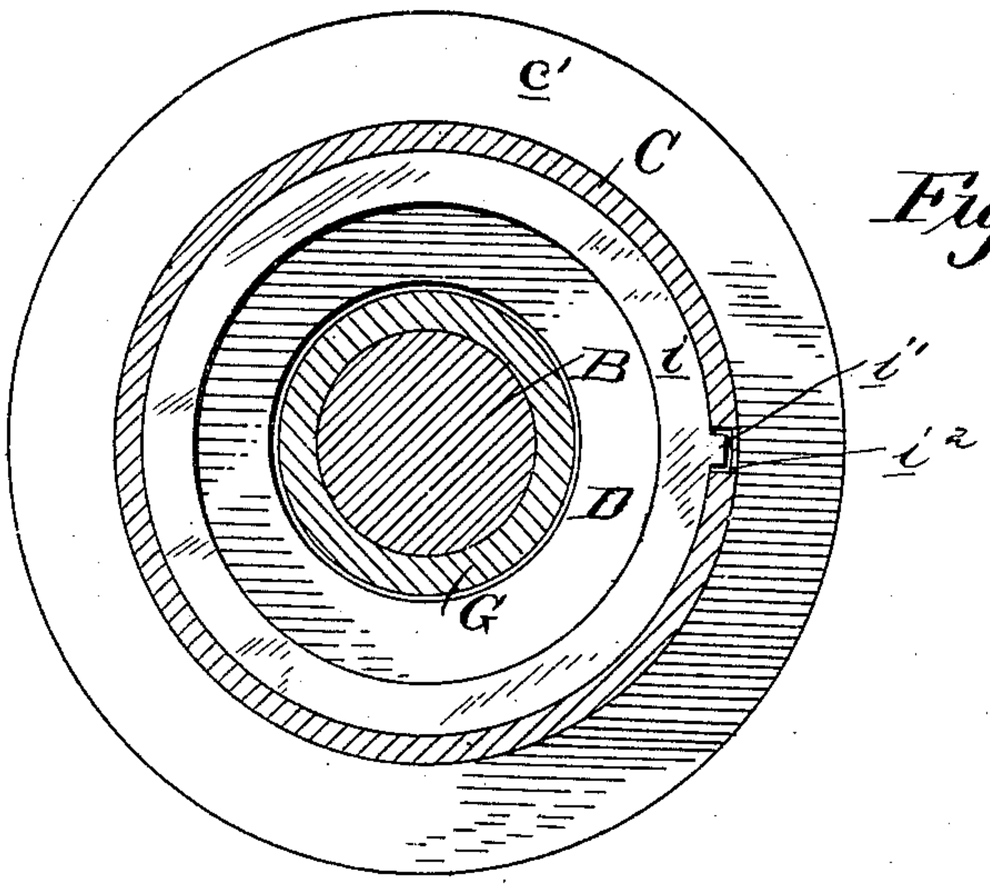
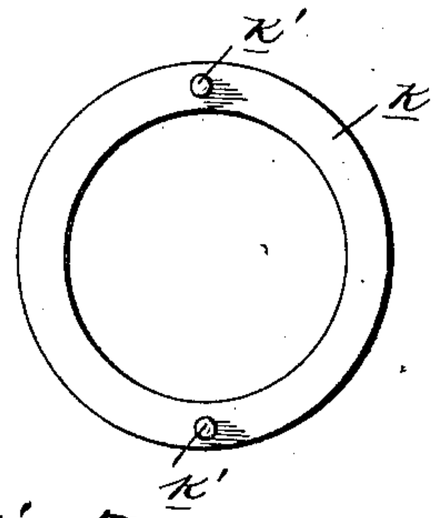


Fig. 3.



WITNESSES:

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JOHN P. WULFF, OF ALBERT LEA, MINNESOTA, ASSIGNOR OF ONE-HALF TO W. A. MORIN, OF SAME PLACE.

HUB.

SPECIFICATION forming part of Letters Patent No. 682,897, dated September 17, 1901.

Application filed December 3, 1900. Serial No. 38,483. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. WULFF, a citizen of the United States, residing at Albert Lea, in the county of Freeborn and State of Minnesota, have invented certain new and useful Improvements in 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.

This invention relates to improvements in ball-bearing constructions designed, primarily, for use in connection with vehicle-hubs, but adaptable to other applications, and has for its primary object the special arrangement of the balls and their raceways within a cylindrical casing, so that the same will be simple, compact, and capable of ready adjustment upon a spindle.

The invention contemplates many novel improvements in the details and arrangement of the several parts of the bearing, as will more fully appear in the specification and claims hereinafter.

An embodiment of the invention is disclosed in the accompanying drawings, forming part hereof, and when hereinafter referring to the same like reference characters refer to corresponding parts in the several views.

Figure 1 is a longitudinal sectional view through a hub, showing the parts in their proper relative positions when applied to the spindle. Fig. 2 is a sectional view on the line X X of Fig. 1, and Fig. 3 is a detailed view of one of the washers.

Referring more specifically to the drawings, A designates a vehicle-axle of any ordinary or preferred construction provided with a spindle B, having the collar or enlarged portion *b* at its inner end and a screw-threaded projection *b'* at its outer end.

C is a cylinder provided with spoke-flanges *c*. For a suitable distance from each end the cylinder is interiorly screw-threaded for the reception of the exteriorly-screw-threaded cone members D D'.

The skein or axle sleeve is in the present instance composed of three members E, F, and G. The members E and G are designed to support cones in a manner to be described, and the intermediate member F serves as an abutment or spacing sleeve to retain the bearings at the respective ends of the hub properly separated, while at the same time in position to be so clamped that the whole may constitute, in effect, a single or continuous sleeve. At the extreme inner ends of the members E and G are shoulders or flanges *e* and *g*, against which the cones *d* abut and are prevented from inward movement. These cones are so adjusted relative to the cones D that suitable annular raceways *h* are provided for the balls H. The members E and G pass through but loosely engage the cone-rings D and D' and are at their outer ends exteriorly threaded, as at *e' f'*. Cones *d'* are screwed onto the members E and G into such proximity to the rings D' that suitable annular raceways *h'* are provided therebetween in which the balls H' revolve. The proper adjustments of the parts just described are effected while they are being applied to the cylinder C prior to being slipped upon the spindle B. To bind the cone-rings D D' upon the cylinder, that the same may always rotate therewith, I place washers *i* therebetween, the same being held from independent rotary movement by lugs *i'* thereon projecting into the recesses i^2 in the casing, while corresponding washers *k*, provided with projections *k'*, entering suitable recesses in the outer surfaces of the cone-rings D', lie between said outer cones and the screw-threaded locking-rings K, which bind the whole together. The cones *d'* on the members E and G are correspondingly locked in position by washers and binding-nuts *l l'*, respectively. When the hub is applied to the axle-spindle, it is locked in proper position thereon by a nut L, a suitable washer l^2 being suitably interposed. The extreme outer ends of the hub-cylinder are exteriorly screw-threaded for the reception of the dust-caps M M', the latter being suitably perforated to fit over the member E of the skein.

It will be observed from the above description that the only movable parts of the hub herein will be the cylinder and the two cones immediately attached thereto, with their locking means and the respective dust-caps.

It will be understood that minor changes in

the details of construction and arrangement of the several parts may be made without departing from the spirit of the invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In combination with a hub-cylinder, cone-rings threaded therein, a skein divided into two outer members, and an intermediate spacing member, cone-rings on the respective outer members arranged opposite the rings on the cylinder so as to form raceways therebetween, balls in said raceways, and means for locking the whole in proper relative positions, substantially as described.

2. In combination with a hub-cylinder, oppositely-disposed cone-rings screw-threaded into each end of the cylinder, a divided skein passing loosely through the cone-rings, cone-rings at the opposite ends of the skein so disposed relative to the rings on the cylinder as to form a plurality of raceways therebetween, balls in said raceways, and means for locking the parts in adjusted positions, substantially as described.

3. In combination with a hub-cylinder, oppositely-disposed cone-rings secured in each end of the cylinder and arranged back to back, a skein passing loosely through the cone-rings, cone-rings secured to each end of the skein respectively inside the rings on the cylinder and arranged to form in conjunction therewith a plurality of raceways at each end of the cylinder, balls in the raceways, and means for locking the parts in adjusted positions, substantially as described.

4. In combination with a hub-cylinder, cone-rings screw-threaded into the opposite ends of the cylinder, a divided skein comprising outer and intermediate spacing members passing loosely through the cone-rings, cone-rings at the opposite ends of the skein so disposed relative to the rings on the cylinder as to form raceways therebetween, balls in the raceways, and means for locking the parts in adjusted positions, substantially as described.

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

JOHN P. WULFF.

Witnesses:

CHARLES J. WULFF,

WEBSTER HORNING.