

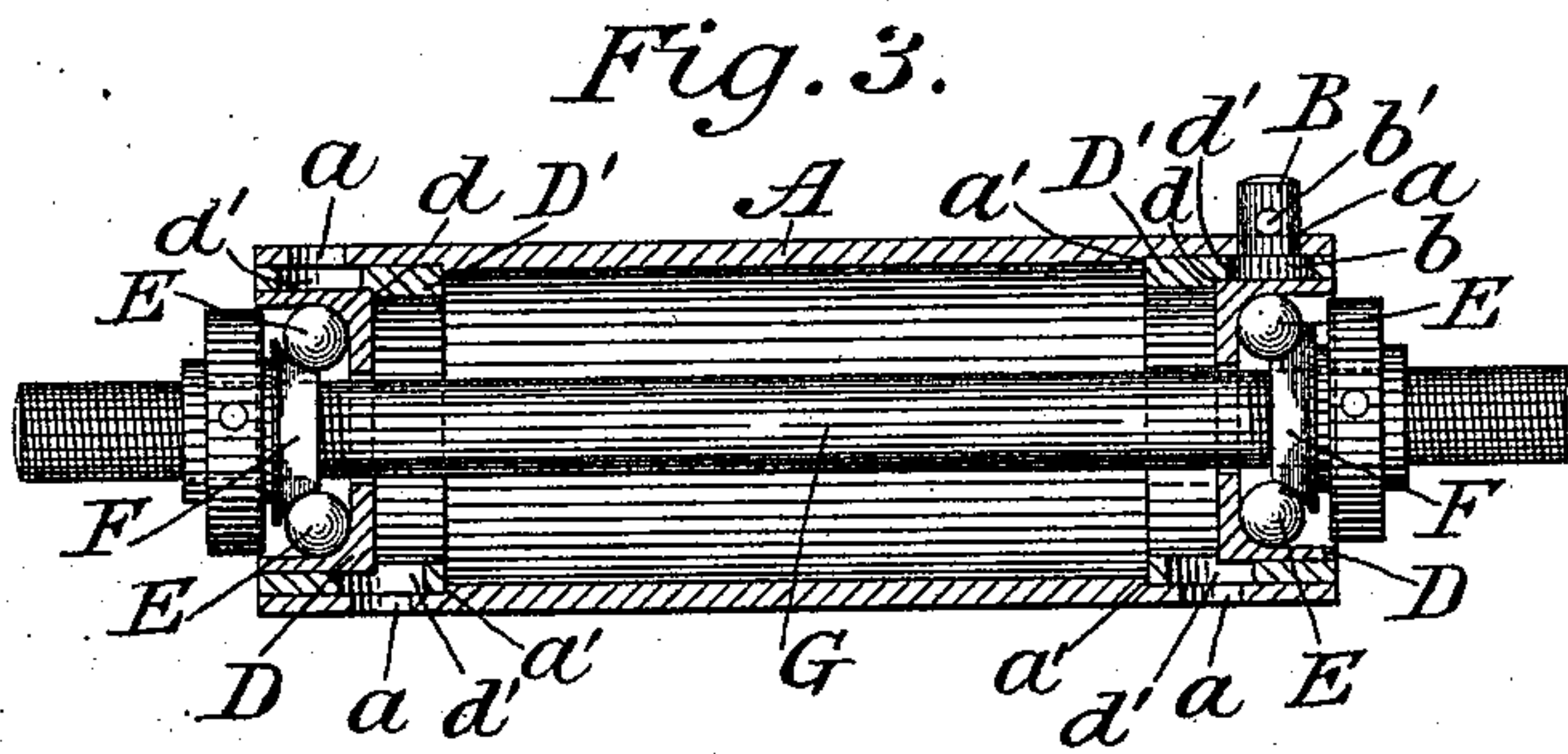
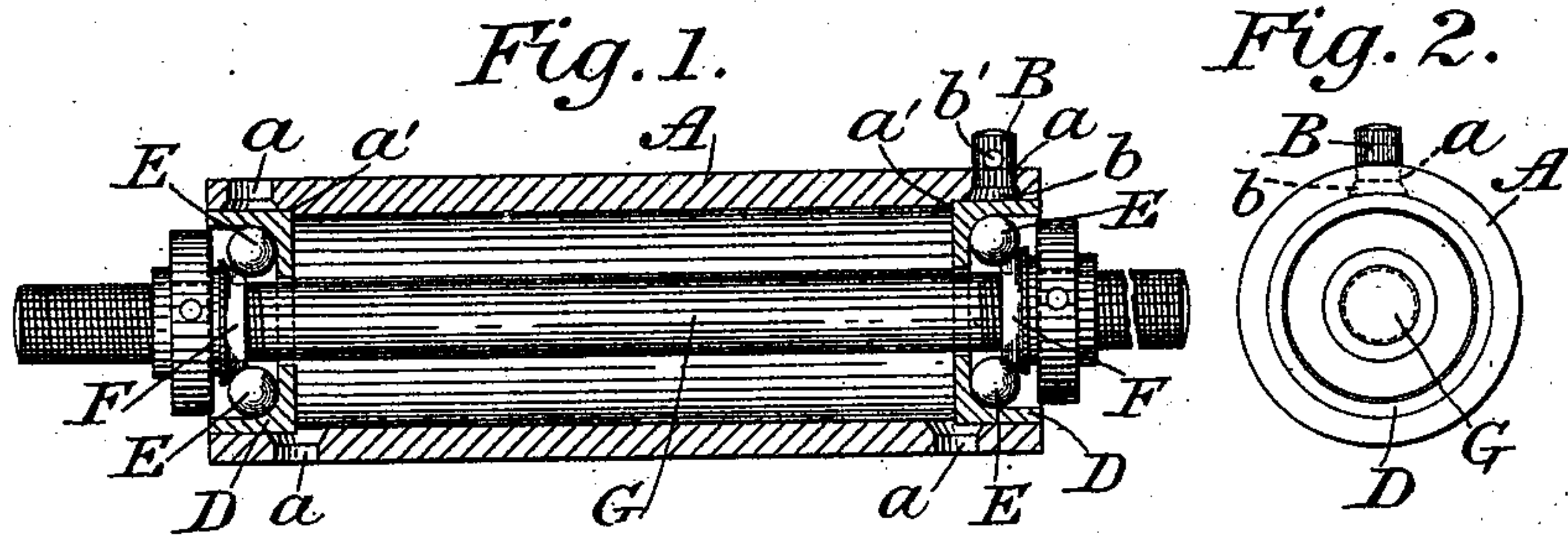
(No Model.)

2 Sheets—Sheet 1.

J. S. COPELAND.  
WHEEL FOR VEHICLES.

No. 574,713.

Patented Jan. 5, 1897.



*Attest:*  
*A. N. Jesbera.*  
*Chas. E. Spworth.*

*Inventor:*  
*James S. Copeland*  
*by Redding, Kiddle & Greeley*  
*Attys.*

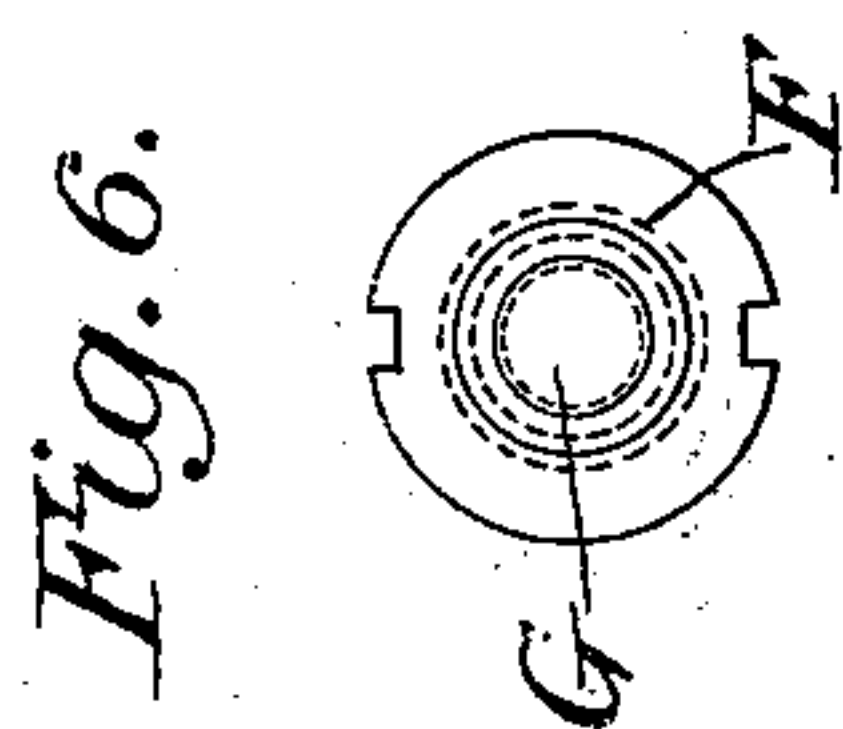
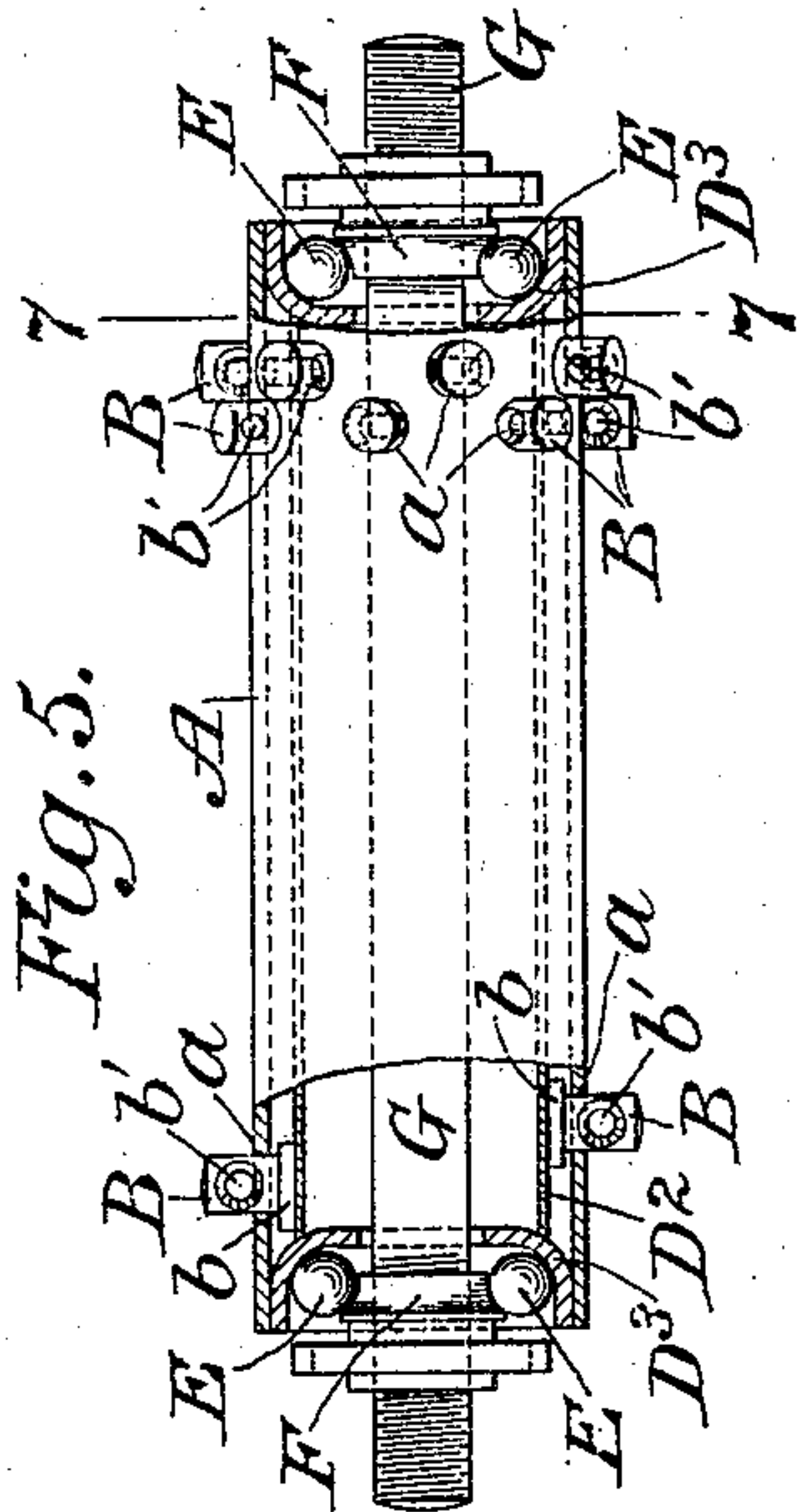
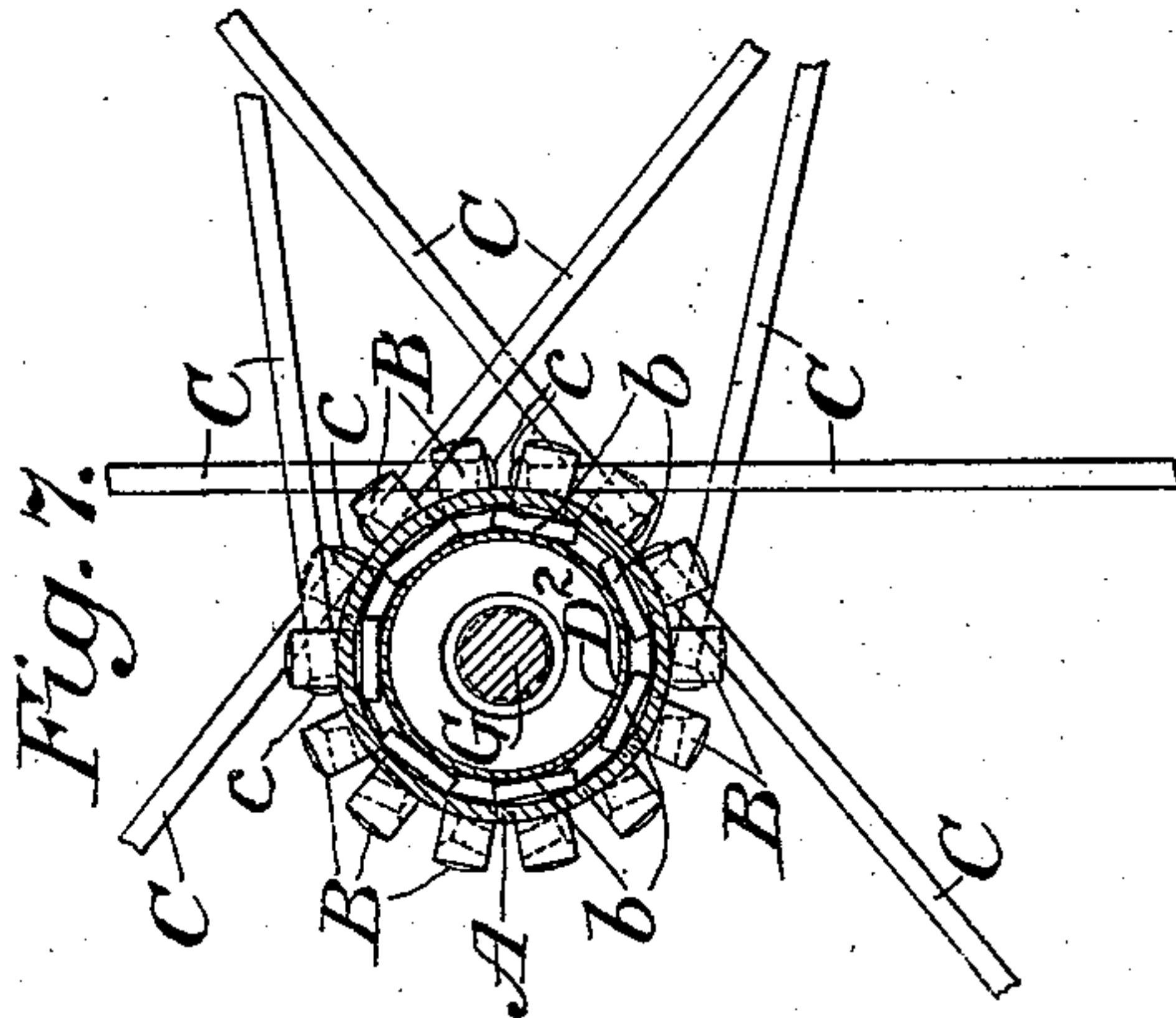
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# UNITED STATES PATENT OFFICE.

JAMES S. COPELAND, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE POPE MANUFACTURING COMPANY, OF SAME PLACE AND PORTLAND, MAINE.

## WHEEL FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 574,713, dated January 5, 1897.

Application filed June 16, 1896. Serial No. 595,764. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES S. COPELAND, a citizen of the United States, residing in the city and county of Hartford, in the State of Connecticut, have invented certain new and useful Improvements in Wheels for Vehicles, &c., of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

This invention relates particularly to the construction of the hubs of wire wheels, that is to say, of wheels having wire spokes, such as are commonly employed for velocipedes and other like vehicles; and it has for its object to improve the devices for securing the wire spokes to the hub. To this end the barrel of the hub is provided with holes to receive studs which are inserted through said holes, each stud being headed to engage the barrel and having an eye for the engagement of the spoke.

The improved construction will be more fully described hereinafter with reference to the accompanying drawings, in which several embodiments of the invention are illustrated, and in which—

Figure 1 is a longitudinal central section of the hub with the axle and its attached parts in elevation. Fig. 2 is an end view of the same, only one of the studs, hereinafter referred to, being shown. Figs. 3 and 4 are views similar to Figs. 1 and 2, respectively, but showing a slightly different construction. Fig. 5 is a view, partly in longitudinal section and partly in side elevation, illustrating still another form of construction. Fig. 6 is an end view of one of the bearing-cones. Fig. 7 is a section on the plane indicated by the line 7 7 of Fig. 5, some of the spokes being shown in engagement with the hub.

As represented in the several figures of the drawings, the hollow barrel A of the hub, which receives and supports the bearings in any suitable manner, is preferably of substantially uniform diameter from end to end and is provided, preferably at each end thereof, with a series of holes *a a*, which are distributed about the circumference of the barrel to correspond with the number of spokes which it is desired that the wheel shall have, the series of holes being fully indicated in

Figs. 5 and 7. Through each hole is inserted from the inside a stud B, which has a head or projection *b* to engage the barrel and to prevent the stud from being drawn out, and in its outer edge an eye *b'*, which is adapted to receive the spoke C, as clearly indicated in Fig. 7, each spoke being headed, as at *c*, to prevent its being drawn through the eye.

It is desirable to provide means to hold the studs *b b* out in place, and to that end the studs of each series are supported upon an internal sleeve. As represented in Fig. 1, the sleeve D is short and constitutes also the case of the ball-bearing. After the studs have been put in place the sleeves or cases D D are inserted and are driven in until they rest against the seat provided for them, which is in this case a shoulder *a'*. The balls E E bear upon the cones F F, which are adjustable upon the screw-threaded ends of the axle G, as usual.

As represented in Fig. 3, the arrangement of the sleeve or case D, balls E E, and cone F is substantially the same as in the construction shown in Fig. 1, but an additional sleeve D' is interposed between the sleeve or case D and the barrel A, the studs B B resting against the sleeve or case D, as before, and being seated in holes *d'*, formed in the intermediate sleeve or bushing D', the latter having a shoulder *d* for the sleeve or case D and itself resting against a shoulder *a'* of the barrel A.

In the construction represented in Figs. 5, 6, and 7 the sleeve D<sup>2</sup>, which supports the studs B B, as before, is made long enough to support both series of studs, while its ends form the seats against which the cases D<sup>3</sup> rest when driven home. The sleeve D<sup>2</sup> thus not only fixes the position of the cases D<sup>3</sup> D<sup>3</sup>, but prevents such dust as may find its way into the barrel A around the studs B B from working into the bearing, and likewise prevents the oil from getting out.

It will be observed that not only does my improvement permit the cost of construction of the hub to be reduced very materially, as compared with the cost of construction of such hubs as are provided with the usual spoke-flanges, by reason of the fact that the barrel can be made of uniform diameter

throughout its length, but that it possesses advantages of its own in that the studs can be rotated in their seats so that the spokes can be put in more easily and in that the  
5 heads of the spokes can be flattened upon one side and caused to bear upon the surface of the barrel, whereby the spokes will resist rotation while the nipples are being set up.

I claim as my invention—

10 1. A hub for a wheel having a barrel provided with holes and studs inserted through said holes from the inside, each of said studs having a head or projection to engage the  
15 spoke, and a sleeve within said barrel to support said studs, substantially as shown and described.

2. A hub for a wheel having a barrel provided with holes and studs inserted through  
said holes from the inside, each of said studs 20 having a head or projection to engage the barrel and an eye for engagement with a spoke, said barrel having a series of holes and studs at each end, a sleeve within said  
barrel to support both series of studs, and 25 bearing-cases secured in the ends of said barrel against the ends of said sleeve, substantially as shown and described.

This specification signed and witnessed this 10th day of June, A. D. 1896.

JAMES S. COPELAND.

In presence of—

FELTON PARKER,

P. HAUSLING, Jr.