

(No Model.)

T. F. LA BELLE.
BICYCLE BEARING.

No. 542,526.

Patented July 9, 1895.

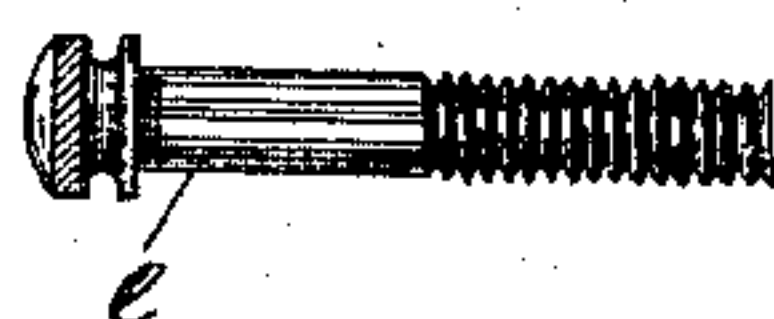
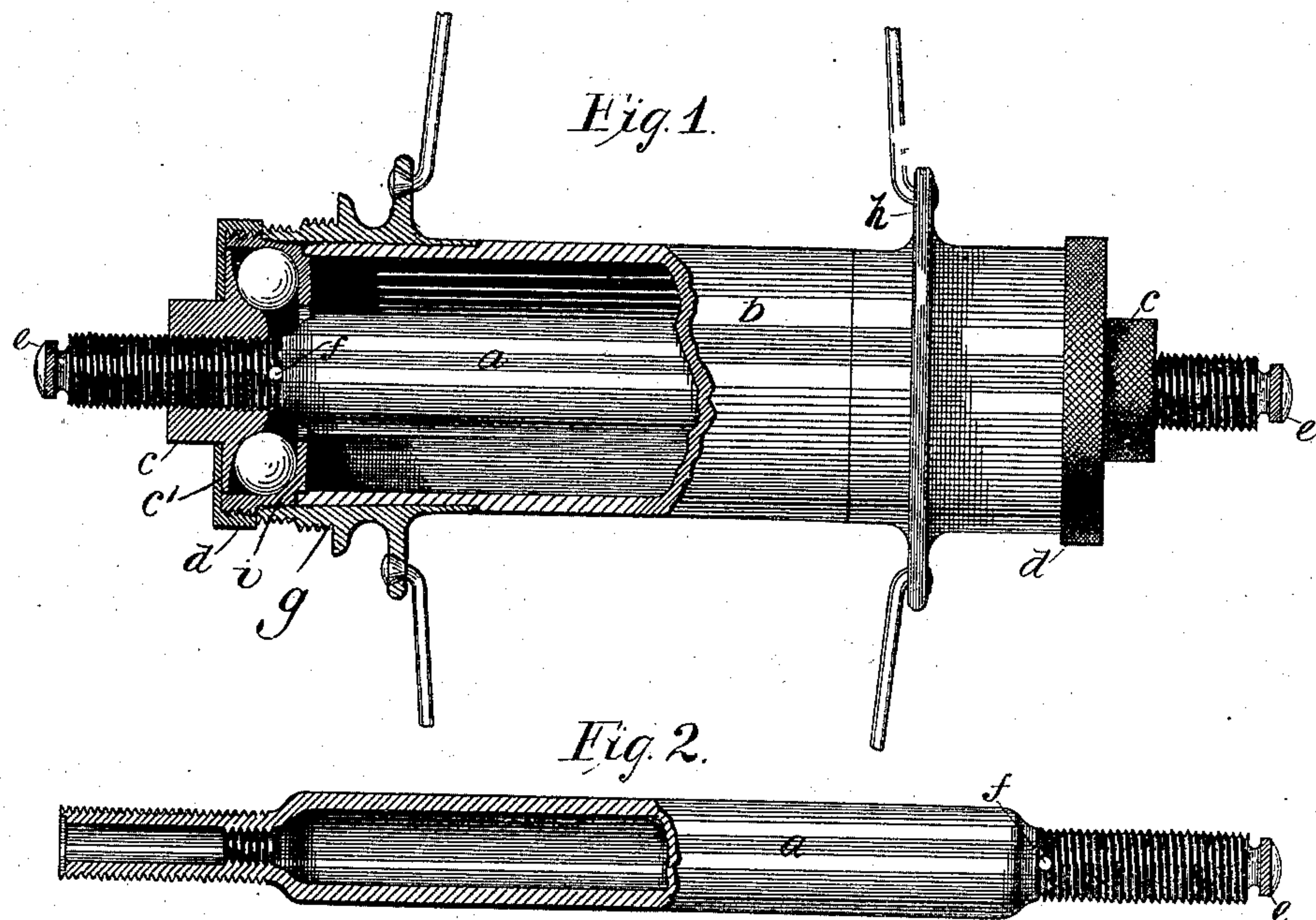


Fig. 3.

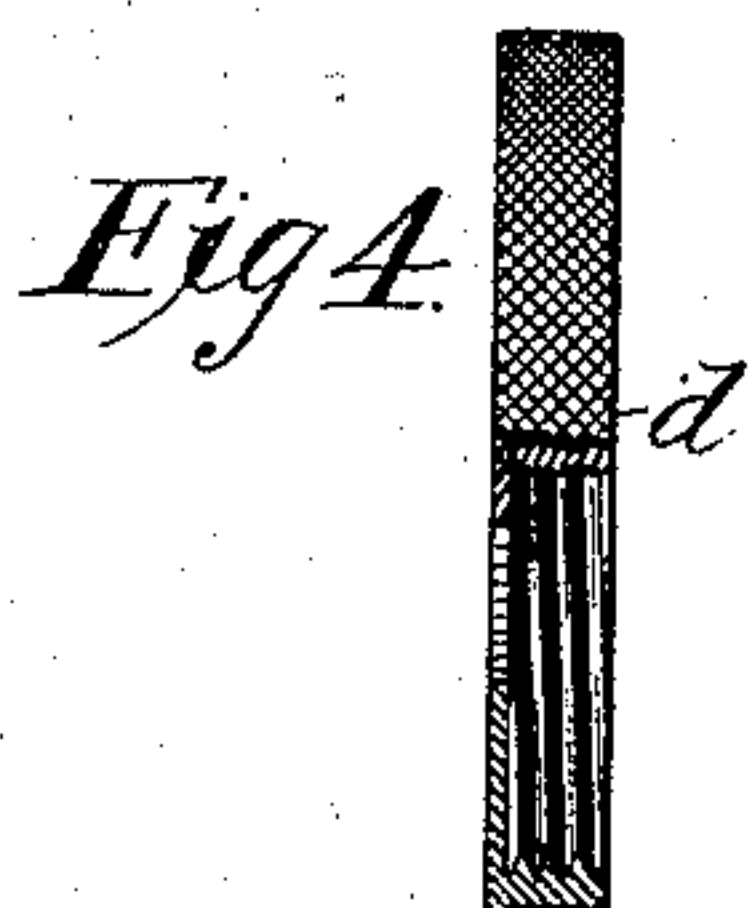


Fig. 4.

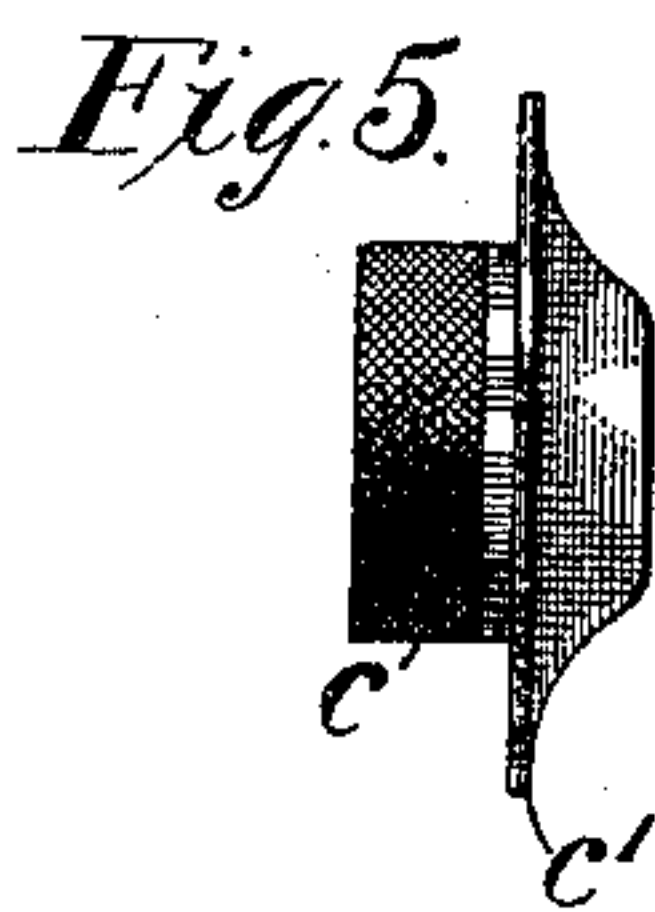


Fig. 5.

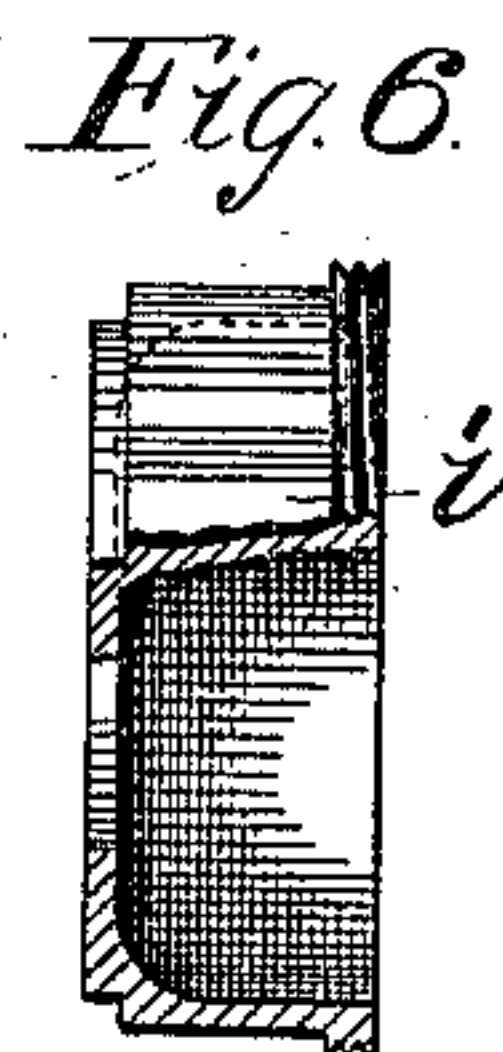


Fig. 6.

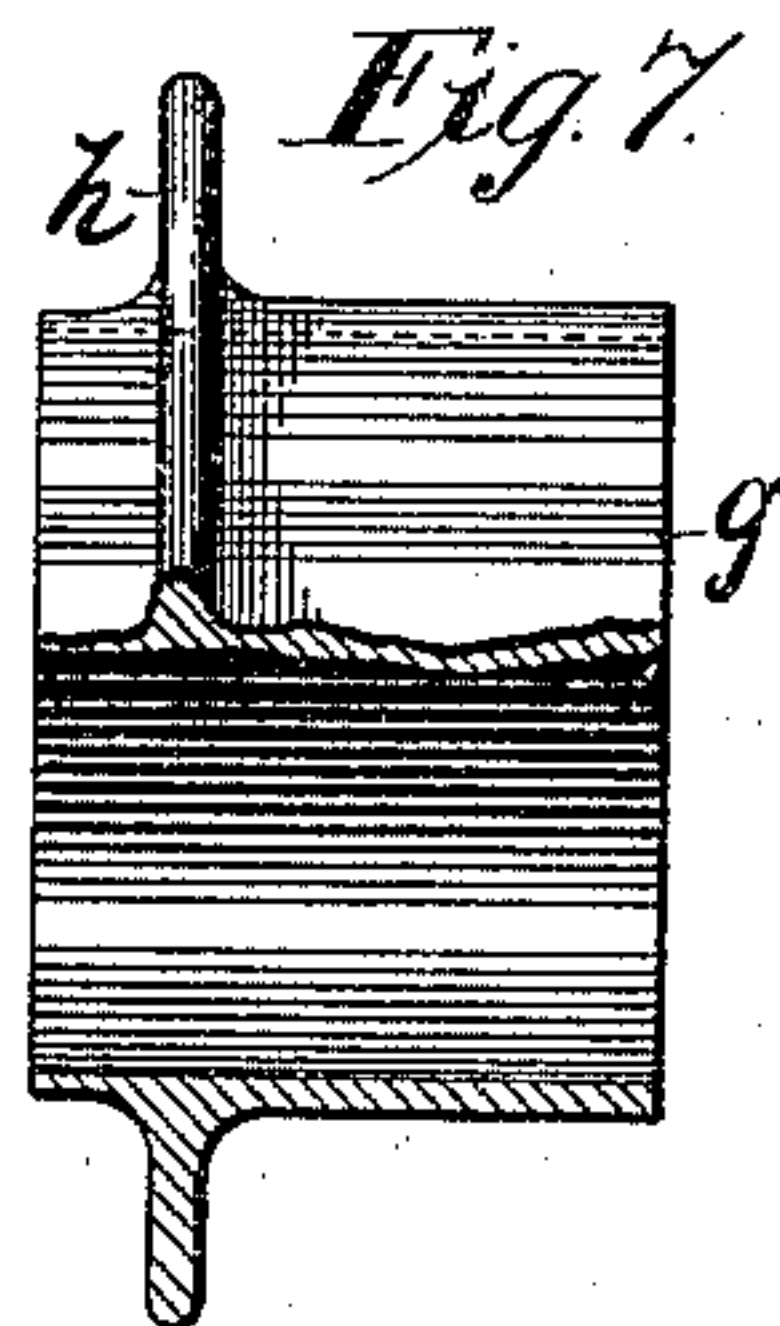


Fig. 7.

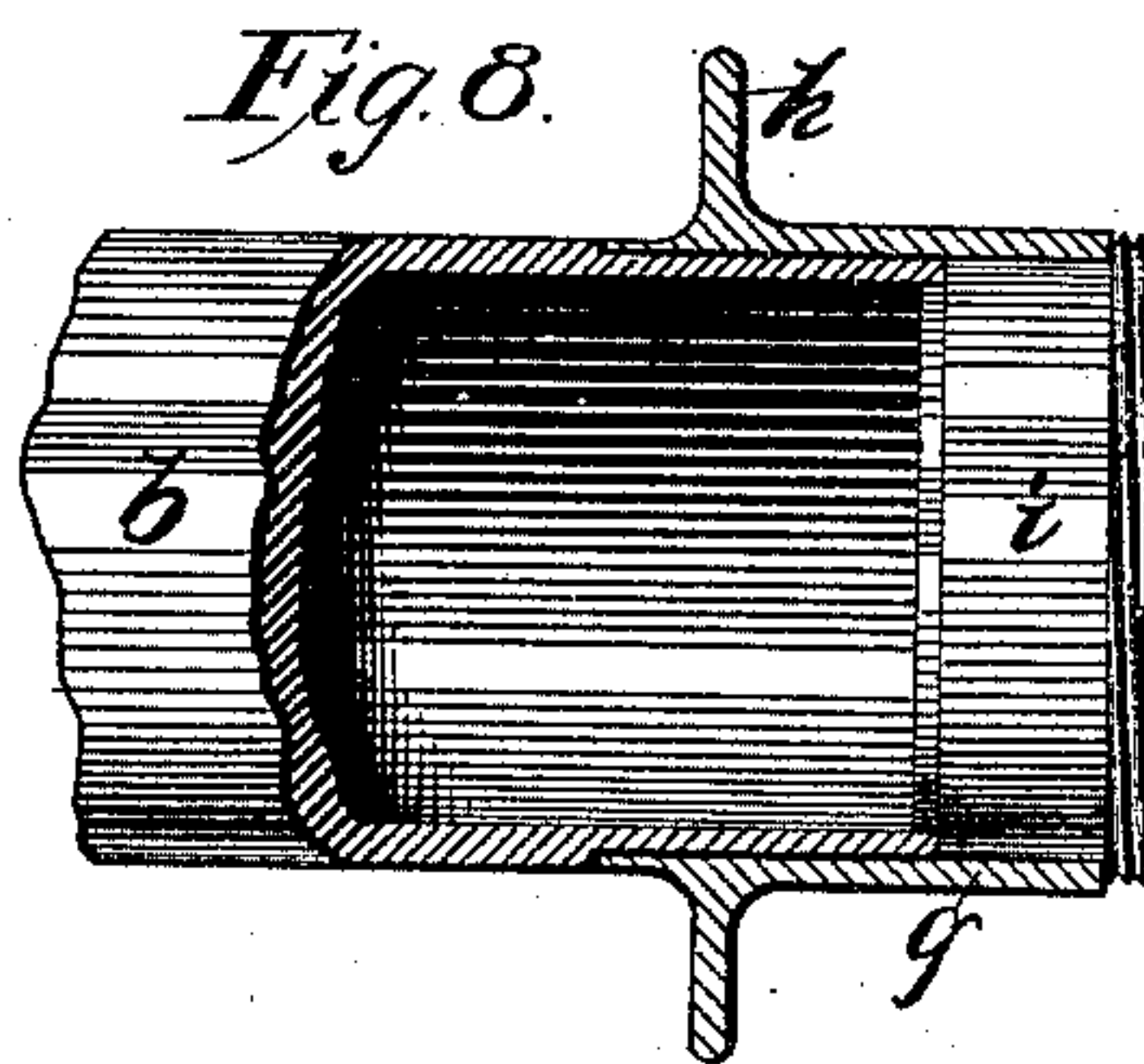


Fig. 8.

Witnesses
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BICYCLE-BEARING.

SPECIFICATION forming part of Letters Patent No. 542,526, dated July 9, 1895.

Application filed October 31, 1894. Serial No. 527,527. (No model.)

To all whom it may concern:

Be it known that I, THOMAS FRED LA BELLE, a citizen of the Dominion of Canada, residing in Holyoke, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Bicycle-Bearings, of which the following is a specification, reference being had to the accompanying drawings and letters of reference marked thereon.

In the drawings like letters of reference indicate like parts.

Figure 1 is a side view, with a part in section, illustrating my complete device with the separate parts assembled in position. Fig. 2 is a side view, with a part in section, of the axle. Fig. 3 is a side view of a cap-screw for closing the end opening in the axle. Fig. 4 is an end view, with a part broken away, of the cap. Fig. 5 is an edge view of the cone-piece. Fig. 6 is an edge view of a removable cup or seat, a part being shown in section. Fig. 7 is a side view, with part in section, of the end collar placed at the right end of the hub, Fig. 1; and Fig. 8 is a side view, with a part in section, of the right end, Fig. 1, of the hub with the cup and collar in position.

In detail, *a* indicates the axle; *b*, the hub or shell; *c*, the cone-piece; *d*, the caps; *e*, the cap-screws; *f*, oil-exit openings; *g*, collars mounted upon the ends of the intermediate shell; *h*, flanges to which the spokes are attached, and *i* removable ball-cups.

The construction and operation of my device will be readily seen upon reference to the drawings, the object being to provide a construction which, while the bearings will be entirely protected from the entrance of dust and dirt and a convenient and permanent oil-supply will be afforded for the bearings, will be inexpensive to manufacture and simple to assemble, and in which the parts can be readily removed and replaced by new parts when worn.

The axle-shaft passes through the wheel hub or shell *b* in the ordinary manner, suitable recesses or channels being formed at each end of the hub to receive the balls. The cone *c* is internally threaded in the usual manner, and its flange *c'* is made of sufficient size to

fill the opening in the end of the hub, while its central portion is made of less diameter. The cap *d* has an opening to receive the central portion of the cone-piece and is provided with an overhanging flange, which flange is interiorly threaded to engage a thread upon the exterior portion at the end of the hub, so that no joints are formed at a point where the dust or dirt can pass directly to the ball-channel; but in order to reach this point it is necessary for the dust to become worked in between the cone-piece *c* and the opening of the cap *d*. It then must pass between the two adjacent surfaces until it reaches the outer edge of the flange upon the cone-piece. It is found, however, in practice that the dust or dirt will not work its way through when the channel is protected in this manner, and my device, therefore, becomes a practicable shield and furnishes a dust-proof bearing.

In my improved bearing I do not form the hub of a single piece but of separate parts. Thus I construct it of the intermediate shell *b*, provided at each end with the collars *g*, which collars are provided with the flanges *h* for engagement of the spokes. Three collars fit tightly upon the ends of the intermediate portion and set up against a shoulder, as shown in Figs. 1 and 8. The end of the intermediate portion forms a shoulder against which the ball-cup *i* rests when forced into position. The ball-cup *i* is formed, as shown, with a rounded interior channel for the balls to traverse, and is made of hardened material and forced into position with a high degree of pressure. When, however, the bearing becomes worn, instead of supplying a new axle I simply disconnect the parts and detach the ball-cups *i*, replacing them with new cups, after which the remaining parts are placed in position and a new bearing is provided. If it be found that the cone-pieces are also worn, new pieces may be supplied.

To provide means to keep the balls oiled automatically, I form the axle with an opening from end to end, (separate openings extending from each end toward the center may, however, be substituted,) and I prefer that the walls of the axle be substantially of the same thickness throughout, so that the oil-

chamber will, in profile, follow the profile of the exterior of the axle. The opening at each end is interiorly threaded and a screw *e* is provided which is adapted to enter the thread in the opening.

One or more orifices *f* are formed in the axle, extending from the chamber to the exterior surface, this opening being formed in line with the traverse of the balls, so that so long as oil is found with the chamber in the axle it will gradually escape and keep the operative mechanism at this point lubricated. It simply, therefore, becomes necessary in order to oil this portion of the machine to remove one of the screws *e*, inject oil into the chamber in sufficient quantity, and to replace the screw, one oiling being sufficient, in many instances, for many hundreds of miles of travel.

Having therefore described my invention,

what I claim, and desire to secure by Letters Patent, is—

The combination of a cylindrical shell *b* having its end portions reduced in diameter to form external circular shoulders, sleeves *g* fitting upon said reduced ends and abutting against said shoulders, projecting beyond the shell, and carrying flanges *h* to which the spokes may be attached, and removable ball-cups *i* received in said sleeves, having reduced portions to be received within the shell, the shoulders so formed abutting against the ends of the shell, and enlarged screw-threaded end portions projecting beyond the sleeves and forming shoulders abutting against the ends of the sleeves, substantially as described.

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Witnesses:

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