

(Model.)

W. F. LEE.
BALL BEARING.

No. 587,446.

Patented Aug. 3, 1897.

Fig. 1.

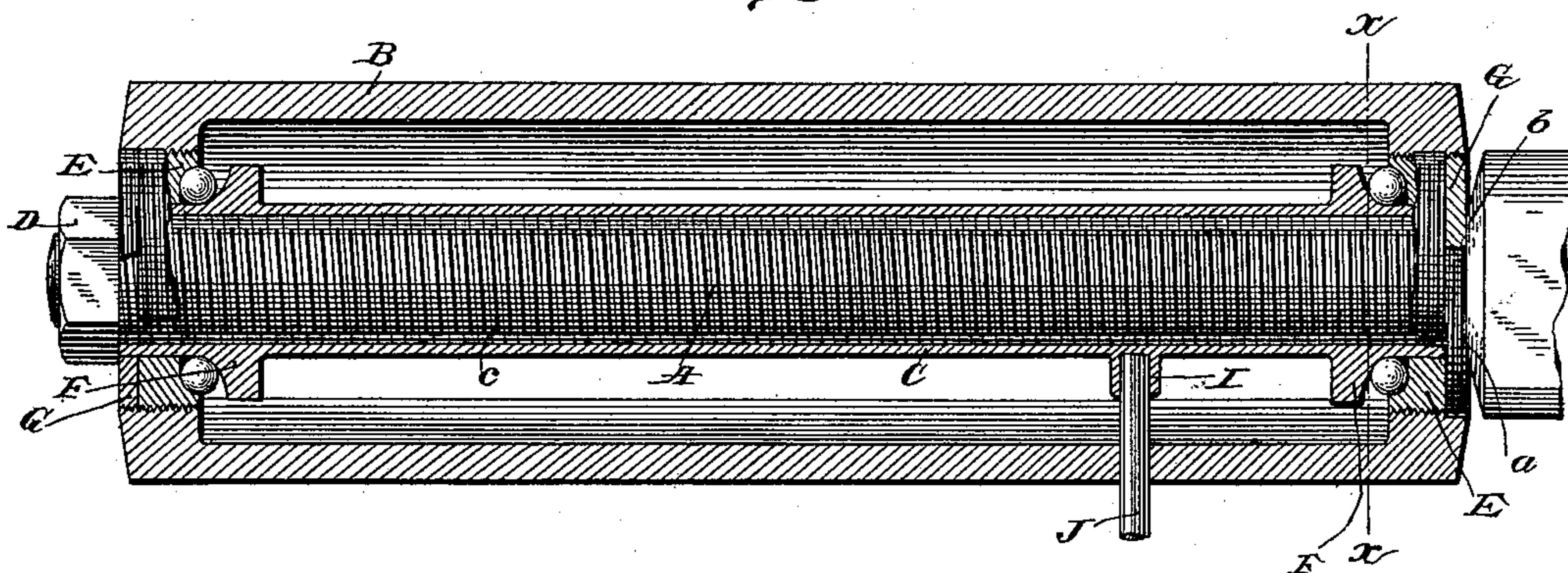


Fig. 2.

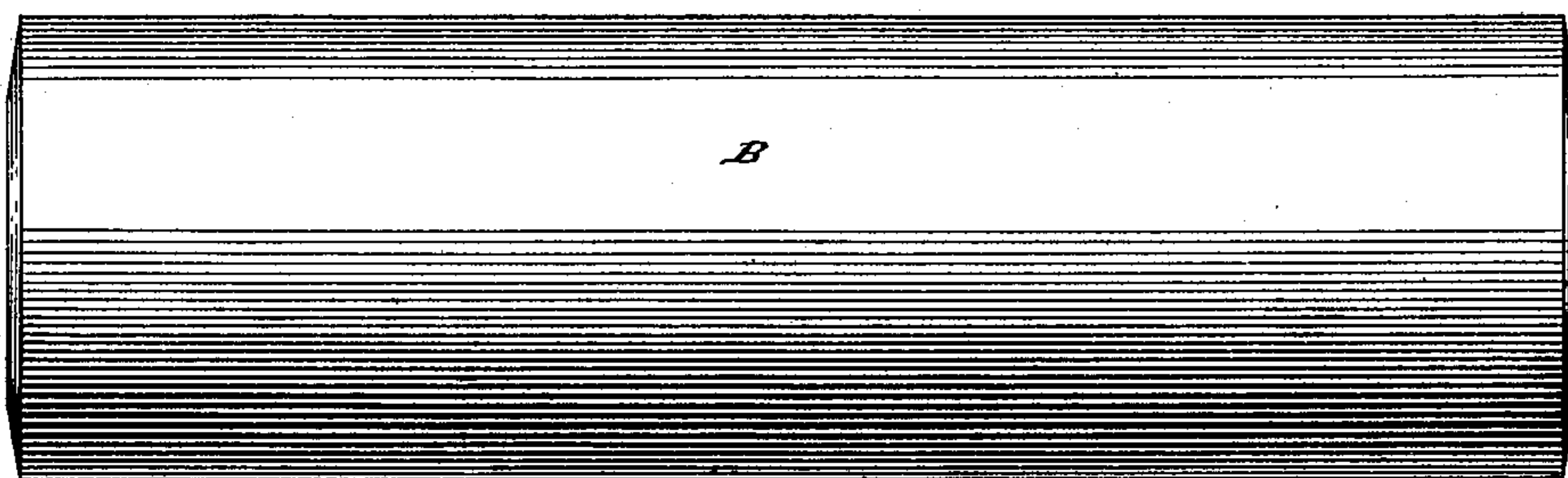


Fig. 3.

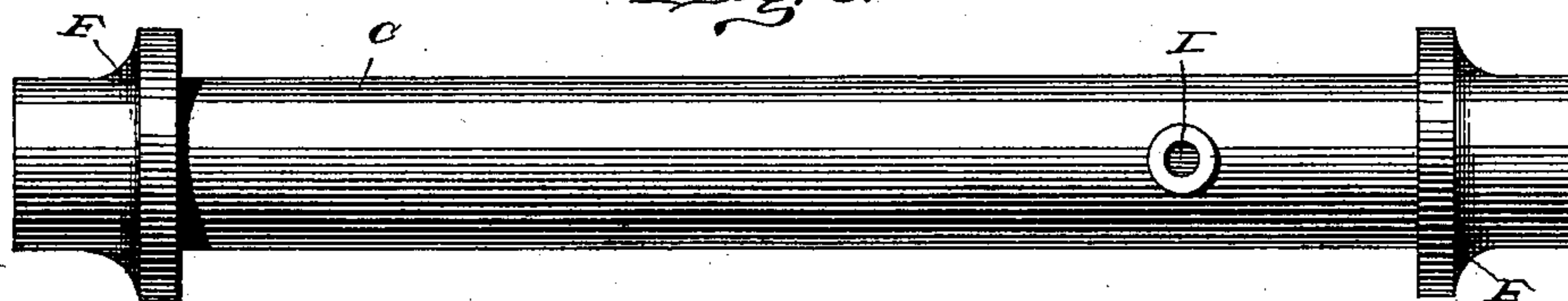
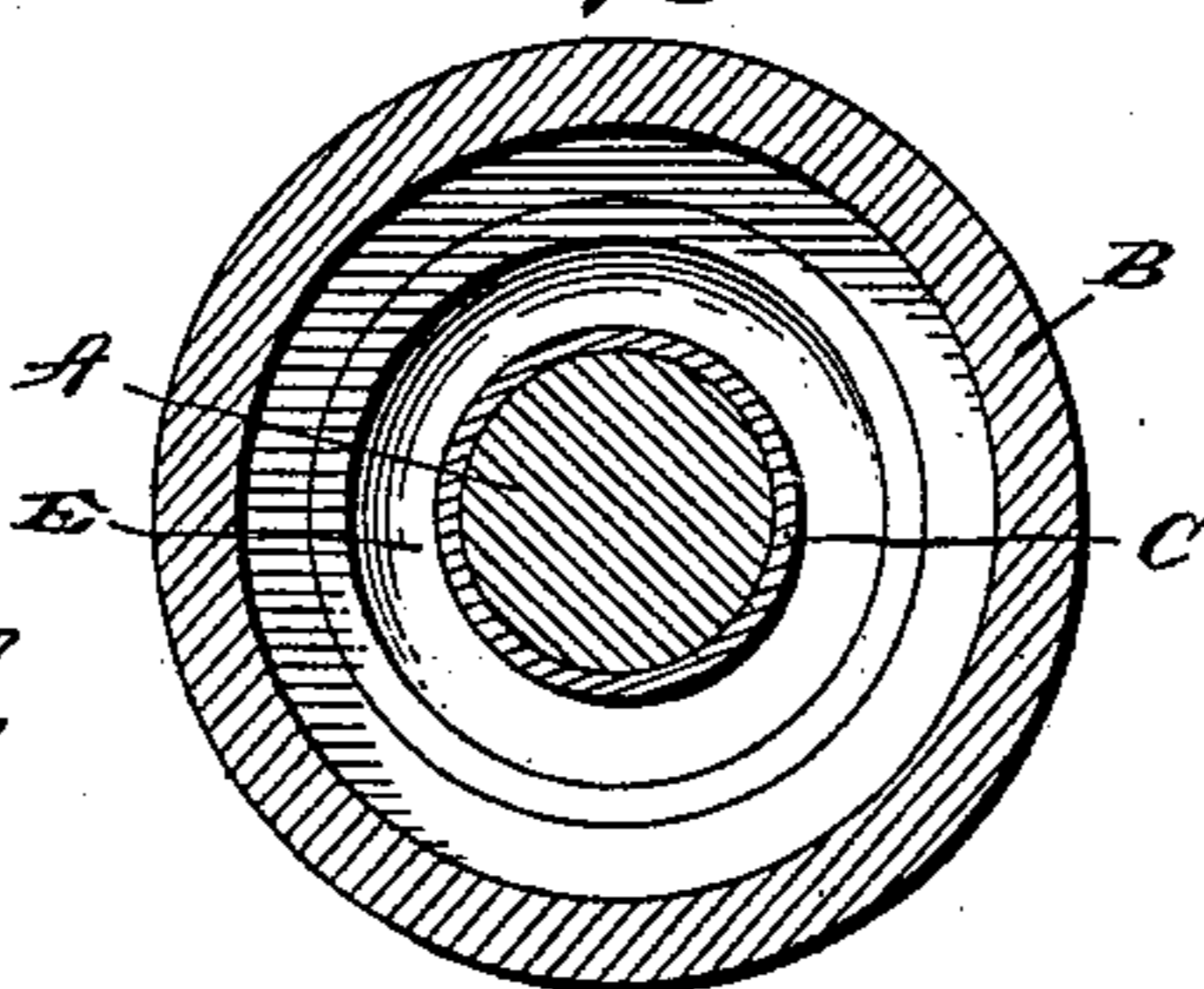


Fig. 4.



WITNESSES

Thos. L. Gatchel.
John W. Appan

INVENTOR.
William F. Lee.
by John Wedduburn
Attorney

UNITED STATES PATENT OFFICE.

WILLIAM FITZHUGH LEE, OF JACKSON, GEORGIA.

BALL-BEARING.

SPECIFICATION forming part of Letters Patent No. 587,446, dated August 3, 1897.

Application filed August 26, 1896. Serial No. 604,046. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM FITZHUGH LEE, a citizen of the United States, residing at Jackson, in the county of Butts and State of Georgia, have invented certain new and useful Improvements in Ball-Bearing Hubs for Buggies or other Vehicles; 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 certain new and useful improvements in ball-bearing hubs for buggies and other wheeled vehicles; and it has for its object, among others, to provide a simple and cheap construction of ball-bearing hub in which larger balls than heretofore used are employed, thus reducing the liability to crush, and by reason of the balls being larger fewer of them are necessary and the number of points of contact are lessened. The wheel can be easily unscrewed from the spindle, and the threading of the cases and check-nuts is so arranged and disposed with relation to the other parts that the bearing cannot run tight and bind.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be specifically defined by the appended claims.

The invention in this instance resides in the peculiar combinations and the construction, arrangement, and adaptation of parts, all as more fully hereinafter described, shown in the drawings, and then particularly pointed out in the claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a substantially central longitudinal section through the hub with the spindle in position. Fig. 2 is a view of the buggy-hub boxing removed. Fig. 3 is a view of the sleeve detached. Fig. 4 is a cross-section near one end.

Like letters of reference indicate like parts throughout the several views.

Referring now to the details of the drawings by letter, A designates the buggy-spindle, of usual length and of like diameter from

inside shoulder to the outside tap end. This spindle from the tap end to within a short distance of the shoulder is screw-threaded, as seen at *a*, the threads running about fifteen or twenty to the inch. Where the threads cease, there is a small shoulder *b* for the sleeve, hereinafter described, to abut tightly against to form a tight joint.

B is the buggy-hub boxing. It is preferably of good steel tubing or drop-forged and bored out and is about eight inches in length, more or less. The inside of this boxing for about three-quarters of an inch, more or less, is threaded, with the threads running from about fifteen to twenty an inch. This threading is to accommodate the ball-cases and the ball-case check-nuts soon to be explained.

C is the sleeve screwed on the threaded buggy-spindle. The sleeve is threaded on the inner face the entire length, as seen at *c*, the threads running the same as those of the spindle and hub-boxing. This sleeve screws onto the threads of the spindle, as shown, and joints tightly against the shoulder *b* on the spindle.

D is the nut on the outer end of the spindle, bearing firmly against the outer end of the sleeve and preventing said sleeve from moving either forward or backward. This sleeve is shaped near each end to form a cone-bearing F.

E are the two ball-cones, one provided with right-hand and the other with left-hand threads.

G are check-nuts for holding the cones in position. One is provided with right-hand threads and the other with left-hand threads.

The sleeve is provided with a keyhole I, and the buggy-box or buggy-box bearing is provided with a coincident keyhole J, adapted to receive the key.

The parts thus constructed are assembled as follows: The hub-boxing is pressed into the buggy-hub (not shown) of suitable size. The left-hand ball-case, which is a right-hand thread, is then screwed into the inside hub end of the hub-boxing sufficiently far to admit of the left-hand check-nut being screwed in flush with the boxing and up against the ball-case. Then insert the forefinger from this end, the wheel lying flat. Then drop the

balls through the outside end into the above-mentioned case (the finger prevents them from falling out) and then insert the sleeve. The keyhole of this sleeve is coincident with the keyhole of the hub-boxing and that of the hub itself. Then the balls are placed upon the outside end of the sleeve. The ball-case which has left-hand threads is now screwed into the outer end of the boxing and down upon the balls. This is the adjusting-case, and should be screwed tight enough to prevent rattling, but not tight enough to bind on the balls and retard their freedom of movement. The check-nuts are now screwed into place on the case. The key made for the purpose is next fitted into the keyhole in the hub and passed through the keyhole in the boxing and lodges in the keyhole in the sleeve. This key holds the sleeve stationary while the same is being screwed onto the spindle by turning the hub round and round as in going forward. The turning of the hub is continued until the sleeve screws up and fits tightly against the shoulder *b* on the spindle. The spindle-nut is now screwed up tight against the outside of the sleeve end and the bearing is complete. It may be easily removed by removing the end nut on the outside end of the spindle and inserting the key into the hub through the keyholes and allowing it to rest in the keyhole of the sleeve and turning the wheel backward. After the wheel has been removed from the spindle the position of the balls remains unchanged. The size of balls employed is one-half inch, in which case but twelve are necessary at each end, but of course the size and number may be varied.

Modifications in detail may be resorted to

without departing from the spirit of the invention or sacrificing any of its advantages.

What is claimed as new is—

1. The combination with the hub-boxing having interior threads, of the sleeve having threads its entire length upon its interior, the right and left threaded ball-cases, and the right and left threaded check-nuts, all substantially as and for the purpose specified.

2. The combination with the threaded spindle, and the hub-boxing having interior threads, the sleeve provided with interior threads and cone-shaped ends, the ball-cases and the check-nuts, all substantially as shown and described.

3. The combination with the spindle having threads and a shoulder at the end of the threads, of the hub-boxing having screw-threads, the sleeve threaded its entire length, the nut on the end of the spindle, the ball-cases right and left threaded, and the right and left threaded nuts, all substantially as and for the purpose specified.

4. The combination of the spindle having screw-threads and a shoulder at the end of said threads, the hub-boxing having interior threads and a keyhole, the sleeve having interior threads and cone-shaped ends and a keyhole, the nut on the end of the spindle, the right and left ball-cases and the right and left check-nuts, all substantially as herein shown and described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILLIAM FITZHUGH LEE.

Witnesses:

A. G. HITCHINS,
OSCAR WEAVER.