

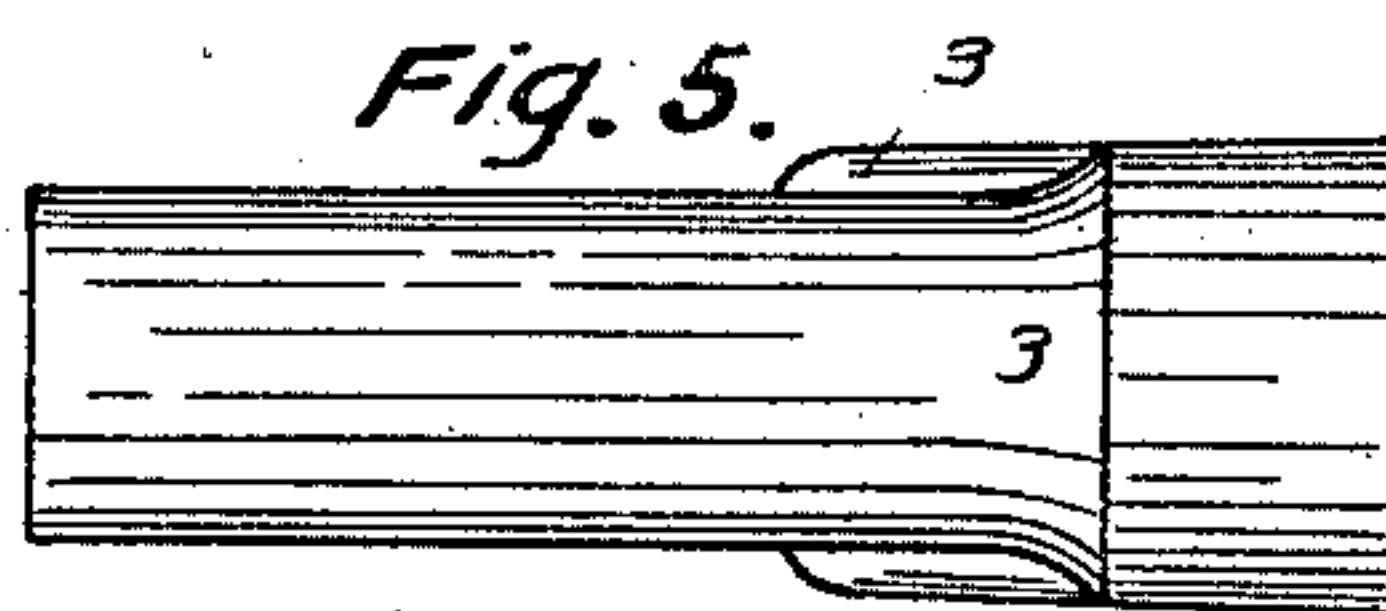
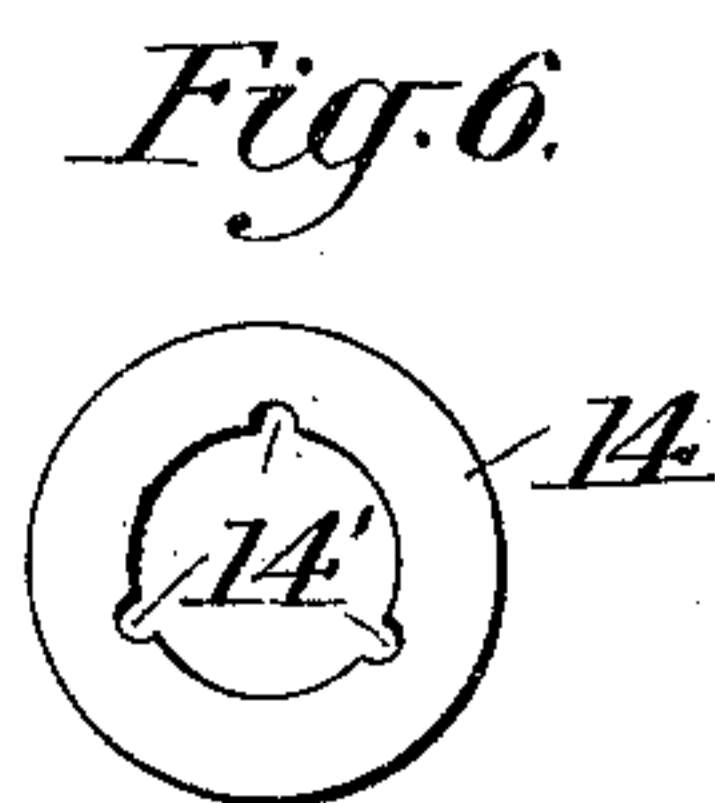
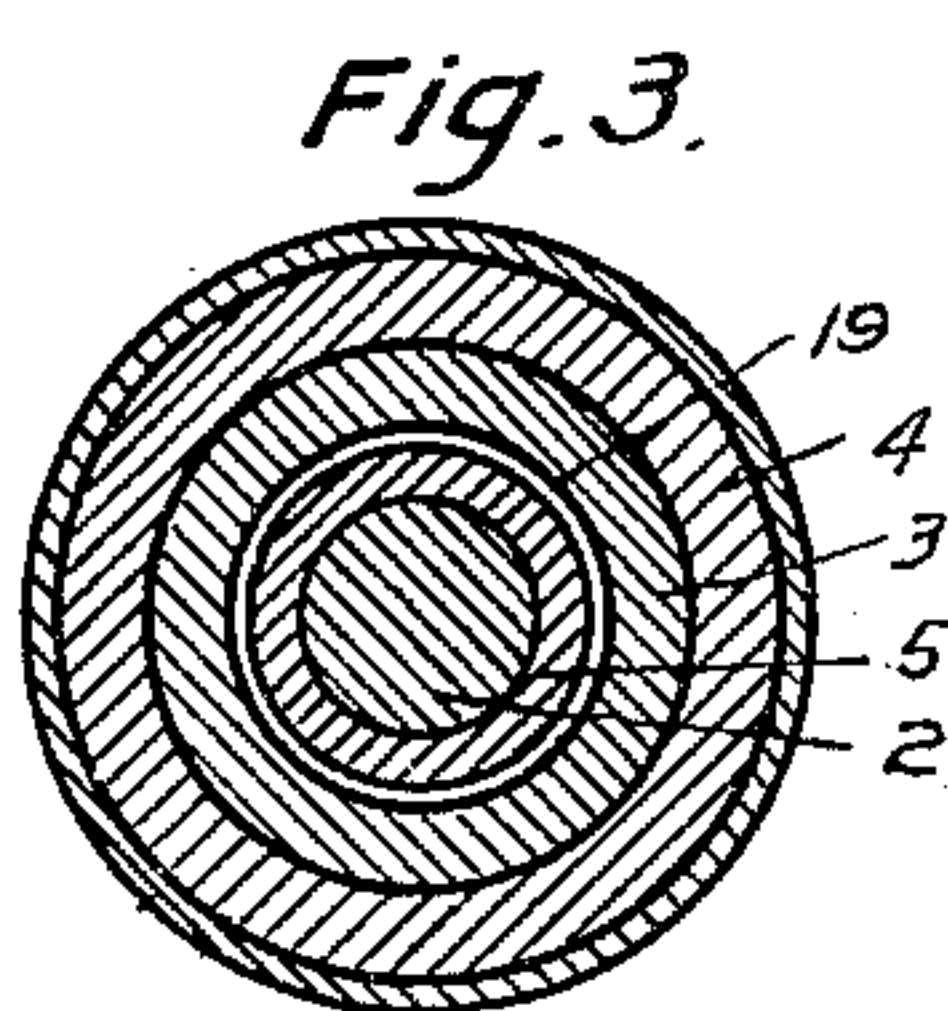
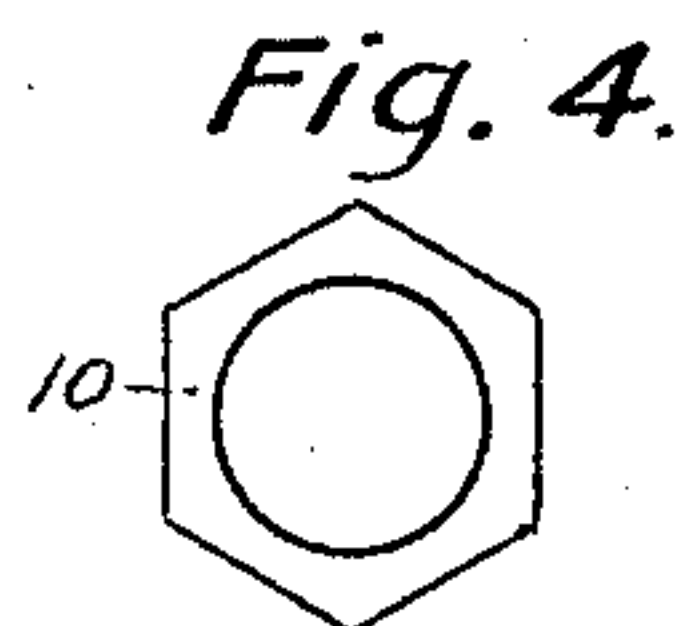
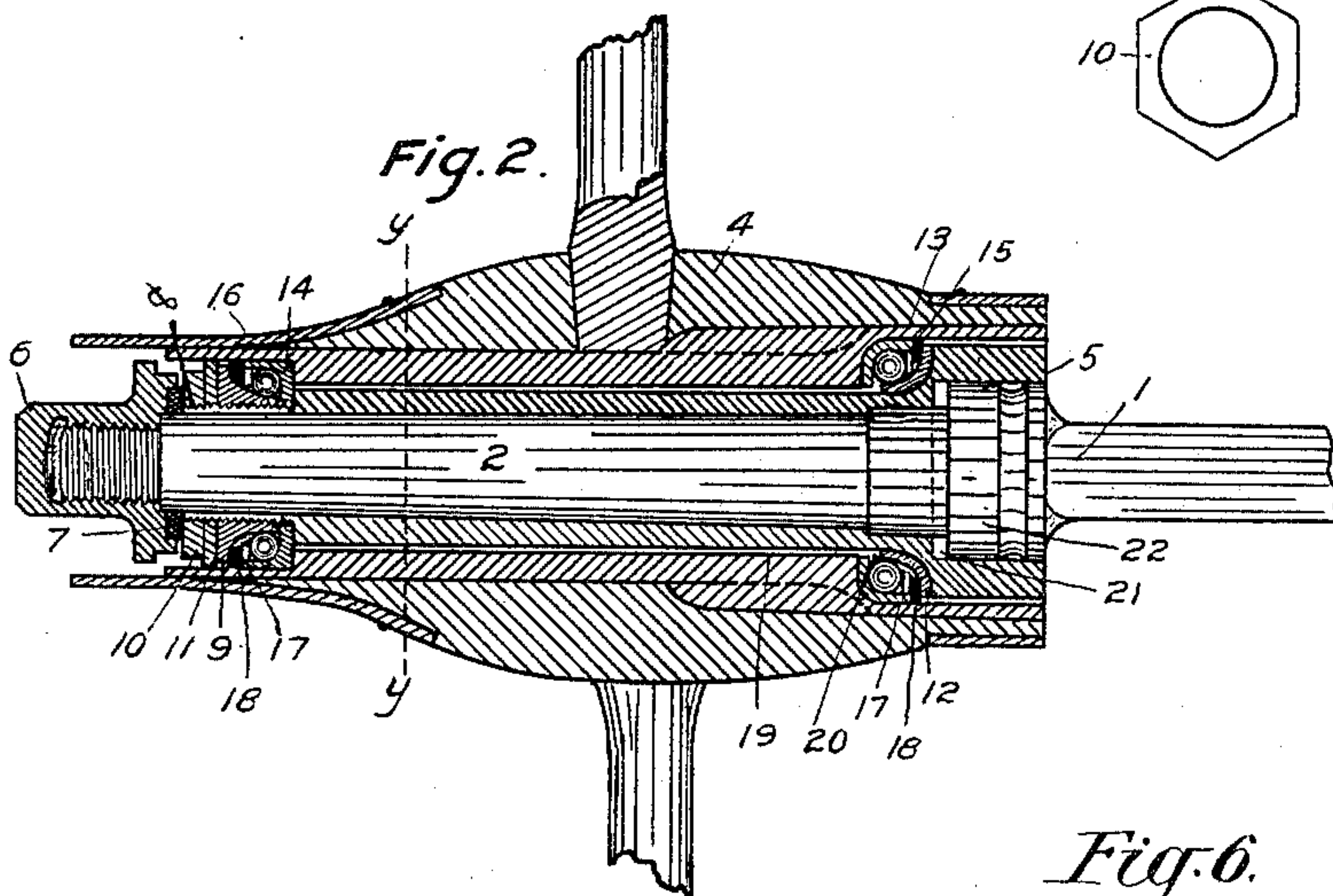
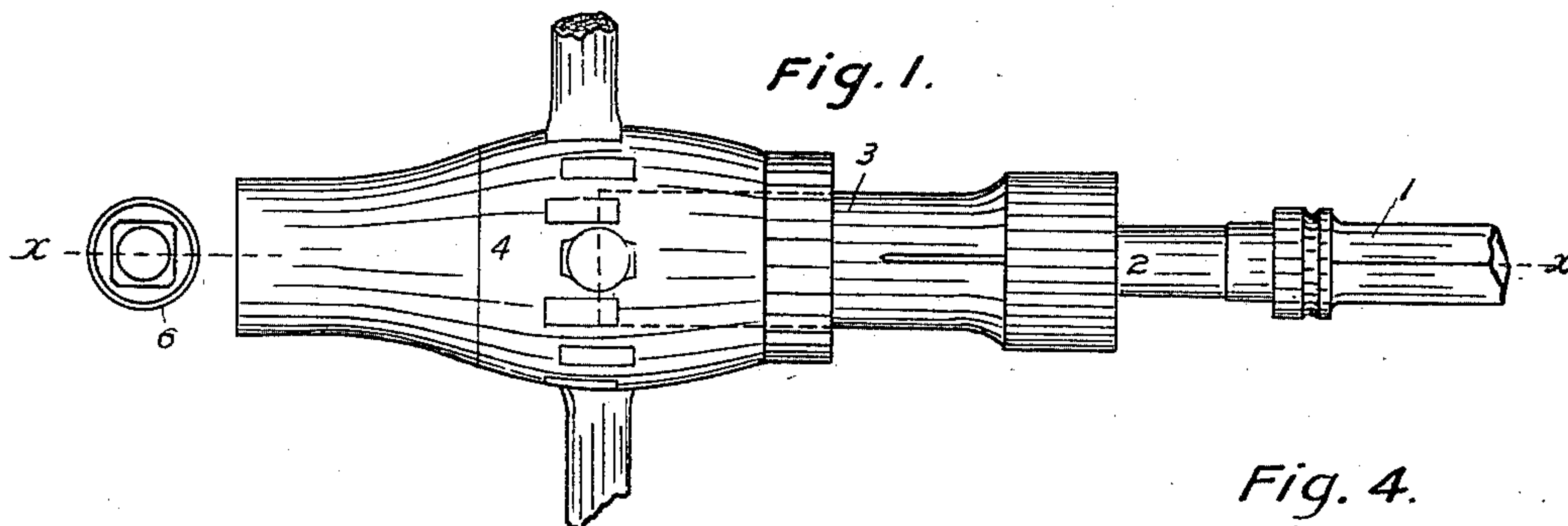
No. 706,402.

Patented Aug. 5, 1902.

C. M. FLOREY.
AXLE BOX FOR CARRIAGES OR WAGONS.

(Application filed Nov. 28, 1900.)

(No Model.)



WITNESSES:

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UNITED STATES PATENT OFFICE.

CLARENCE M. FLOREY, OF SCRANTON, PENNSYLVANIA, ASSIGNOR OF ONE-FOURTH TO JOHN H. BROOKS, OF SCRANTON, PENNSYLVANIA.

AXLE-BOX FOR CARRIAGES OR WAGONS.

SPECIFICATION forming part of Letters Patent No. 706,402, dated August 5, 1902.

Application filed November 28, 1900. Serial No. 38,062. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE M. FLOREY, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Axle-Boxes for Carriages or Wagons, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to improvements in the wheel-hubs of common carriages, wagons, or vehicles, and has for its objects to furnish an antifriction bearing or box suitable for use in the ordinary wooden hub, to facilitate the change from common bearings to ball-bearings in such hubs, to provide for the emergency of breaking of the ball-bearings, and to increase the efficiency of such bearings in general.

20 To this end the invention consists of the construction, arrangement, and combination of the several parts, as herein specified, and illustrated in the accompanying drawings, in which—

25 Figure 1 is a view of the nut and ordinary wooden hub of a vehicle with one of my axle-boxes in the position of being inserted or withdrawn from it, also the vehicle-axle in the process of being inserted to its proper place. Fig. 2 is a view in cross-section, taken on the line $x x$ of Fig. 1, when the parts have been properly placed together. Fig. 3 is a transverse cross-section taken on the line $y y$ of Fig. 2. Fig. 4 is a detail view of a nut used in the device. Fig. 5 is an elevation showing one of my axle-boxes complete in the shape in which it is to be sold. Fig. 6 is an inner side view of one of the outer bearing-cups used in my invention.

40 Similar characters of reference denote like and corresponding parts throughout the several views.

Referring to the drawings, 1 designates the usual vehicle-axle, provided with a spindle 2 of the ordinary form.

My axle-box consists, essentially, of an inner sheath 5 and an outer shell 3, with anti-friction ball-bearings between them. The inner surface of the inner sheath is adapted to serve as a bearing to revolve on the spindle 2 in the emergency of the ball-bearings

becoming inoperative. The device is secured to the axle by the ordinary vehicle-nut 6, having the usual washer 7 impinging against the outer end 8 of the sheath 5. The outer end of the sheath 5 is fitted with a screw-thread, to which is secured the outer ball-bearing cone 9, which is locked in its position by means of a nut 10 following the washer 11, which is interposed between the nut and the cone. The inner bearings of the sheath 5 are lined with a case-hardened cone or shell 12, and the outer shell 3 is fitted with the hardened bearing-cups 13 and 14 at its inner and outer ends, respectively, opposing the cones on the inner shell and having the balls 15 and 16 disposed and operating between the inner and outer cups and cones, respectively. The ball-bearings and their fittings are restricted to a size which may be admitted within the confines or limits of the shell 3 for the purpose of permitting the insertion of the assembled parts through the hub, as shown in Fig. 1. The usual retaining-rings 17 17 are placed within the cups, followed by felt rings 18 18, which latter prevent all dust from reaching the bearings from without. The inner sheath 5 and the outer shell 3 are secured together by placing the rings and bearing-balls into position and securing the two together by means of the nut 10 before the whole is inserted into the hub. An excellent provision for lubricant is provided by this construction in the space 19 between the inner sheath and outer shell, whence the lubricant is readily conducted to the balls of the bearings through openings or ports 14', provided for it in the flat flange of the cup 14, the said flat flange being arranged to turn with a sliding motion against the outer shoulder of the sheath 5 through the fissure 20 between the inner cup and cone.

The operation of my device is readily explained. The ball-bearing box complete is adapted to be driven into the wooden hub after the manner of and after removing the ordinary iron-case boxing now common in wooden vehicle-hubs. The hub of course may necessarily be modified slightly by boring out to fit my improved box; but it is designed that my improved box shall be manufactured in sizes to correspond with the va-

rious spindles and hubs in use. The box, with its bearings complete, need not be separated, but is adapted to be slid into the hub endwise, as suggested in the drawings, without separating the parts. The outer part of the box is provided with lips or frets 3' 3', adapted to prevent the box from revolving or loosening in the hub. Having been inserted in the hub of the wheel, the wheel is secured to the spindle 2 in the ordinary way and the nut 6 run on to its place. If desired, the space 21, in which there is usually a leather washer, may be fitted with a flat steel spring-washer adapted to ease the thrust of the axle in the hub. The pressure between the shoulder 22 of the axle and the nut 6 is sufficient to hold the entire sheath 5 from revolving ordinarily, it being intended that the ball-bearings shall do continuous service. After the permanent insertion of my device in the hub the ball-bearings may be reached for lubrication or repairs by taking off the wheel and unscrewing the nut 10 and the cone 9, after which the entire sheath will draw out, sliding endwise rearward, and the ball-bearings may be thoroughly inspected and additional lubricant, if required, furnished in the space 19 between the outer shell and the inner sheath, which space is adapted to hold sufficient lubricant to lubricate the bearings for a long time. It should also be mentioned that before inserting the spindle 2 it should be lubricated with the ordinary vehicle-lubricant. This provision being made, so that if from any cause the ball-bearings should become inoperative by breaking or otherwise, my device provides for the emergency by permitting the sheath 5 to turn on the spindle in the ordinary way, thus providing an ordinary

bearing as good as those at present and in addition thereto furnish a ball-bearing device without sacrifice of the present axles and hubs in use. 40

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is— 45

1. In a vehicle-axle box, the combination of an inner sheath adapted to revolve on the vehicle-spindle, an outer shell concentric therewith, and mounted thereon, inner end and outer end antifriction-bearings between cups incasing the outer end bearings thereof, said cups being of a diameter less than the general distance between the outside walls of the shell aforesaid, whereby the assembled parts are insertible endwise through the hub of a wheel, filling the same, substantially as specified. 50 55

2. In a vehicle-axle box, the combination of an inner sheath adapted to revolve on the vehicle-spindle, and an outer shell concentric therewith and mounted thereon, inner end and outer end antifriction-bearings, cups incasing the said outer end bearings thereof, the diameters of said cups being less than the minimum diameter of said outer shell, the said inner and outer shells aforesaid having a space between them adapted to be filled with lubricant, and ports leading to the inner end and outer end bearings, substantially as and for the purpose specified. 60 65 70

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

CLARENCE M. FLOREY.

Witnesses:

GEORGE R. CLARK,
A. R. BRUNING.