

(No Model.)

C. M. ANDREWS.
BALL BEARING VEHICLE HUB.

No. 584,838.

Patented June 22, 1897.

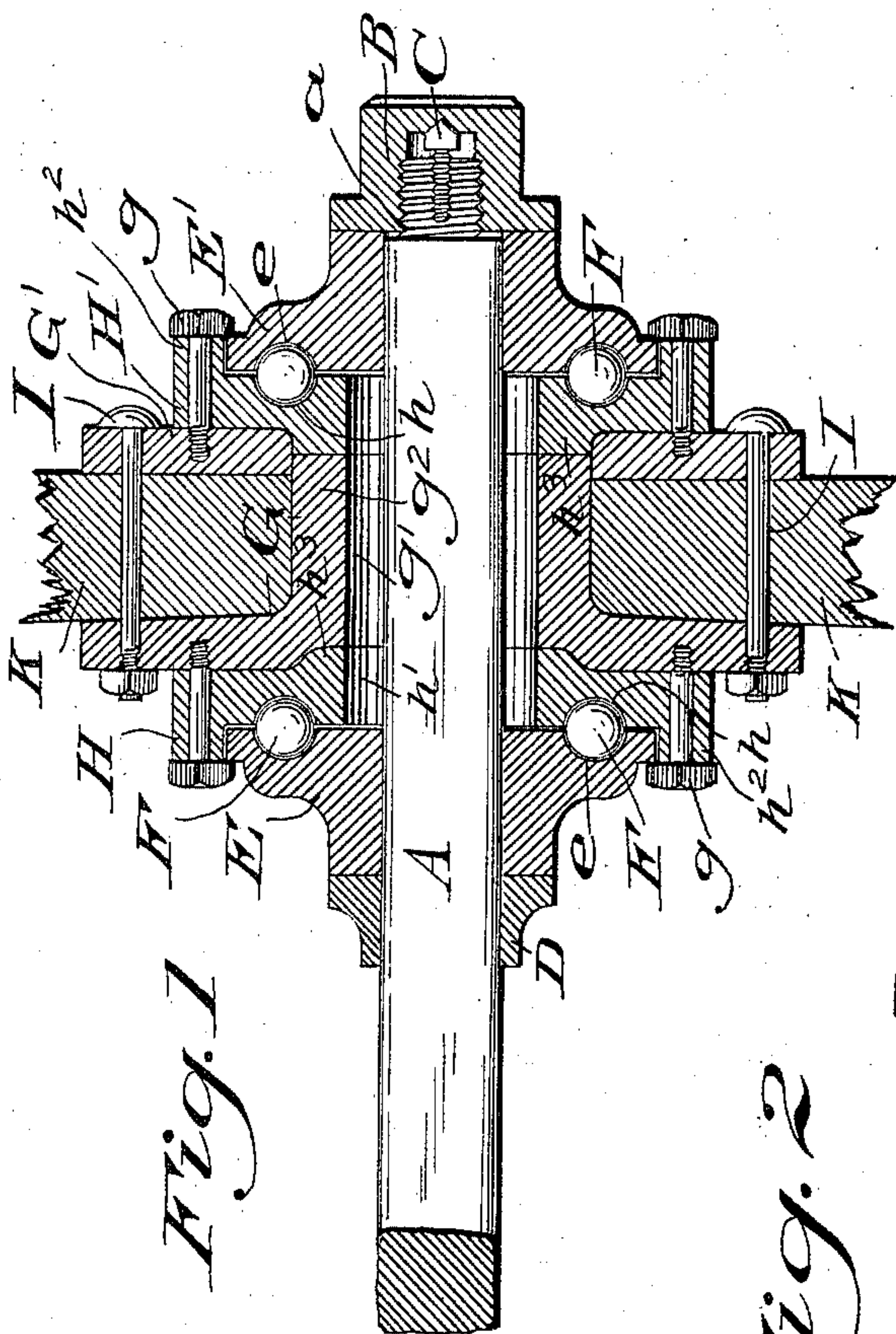


Fig. 2

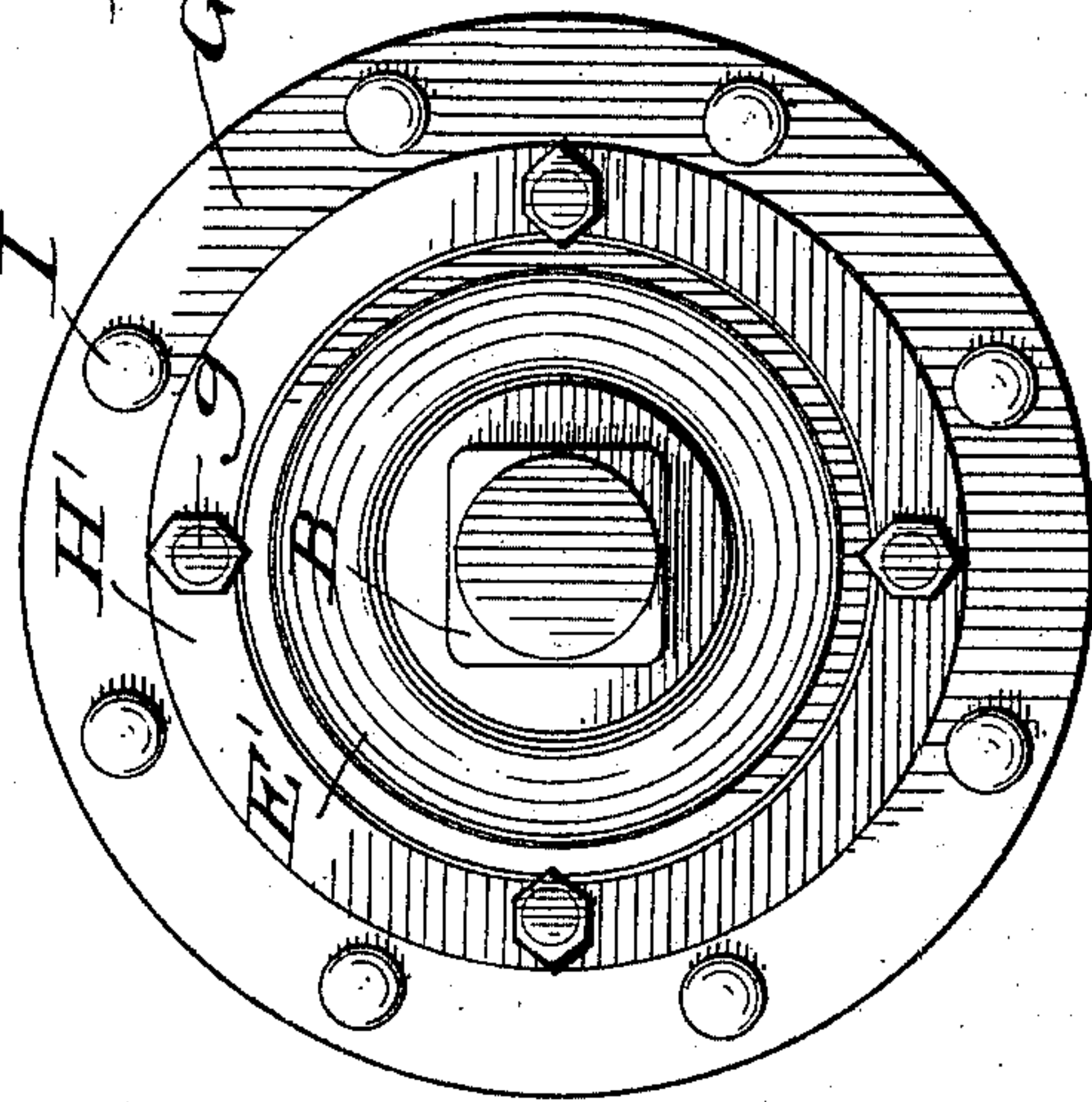


Fig. 3

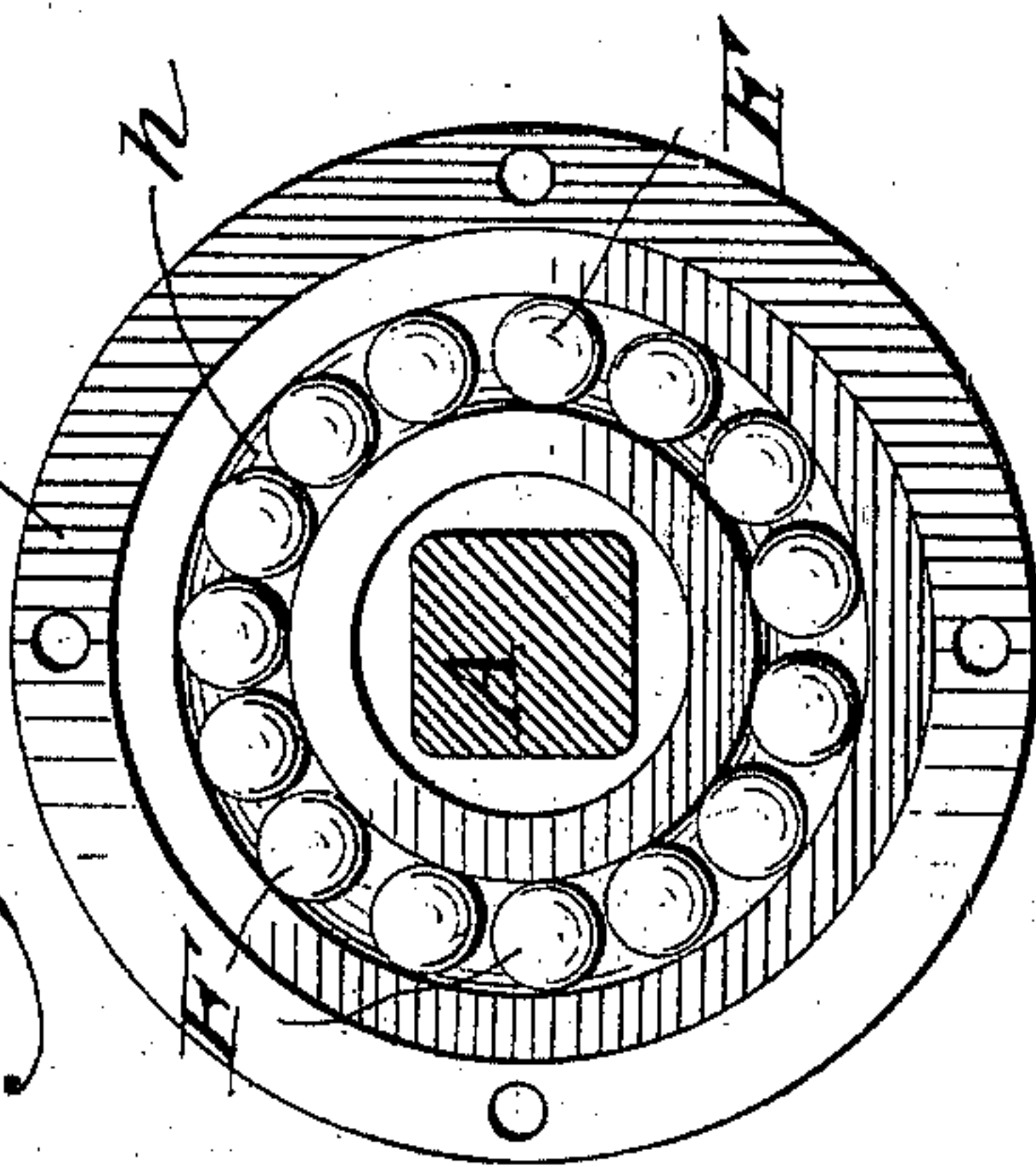
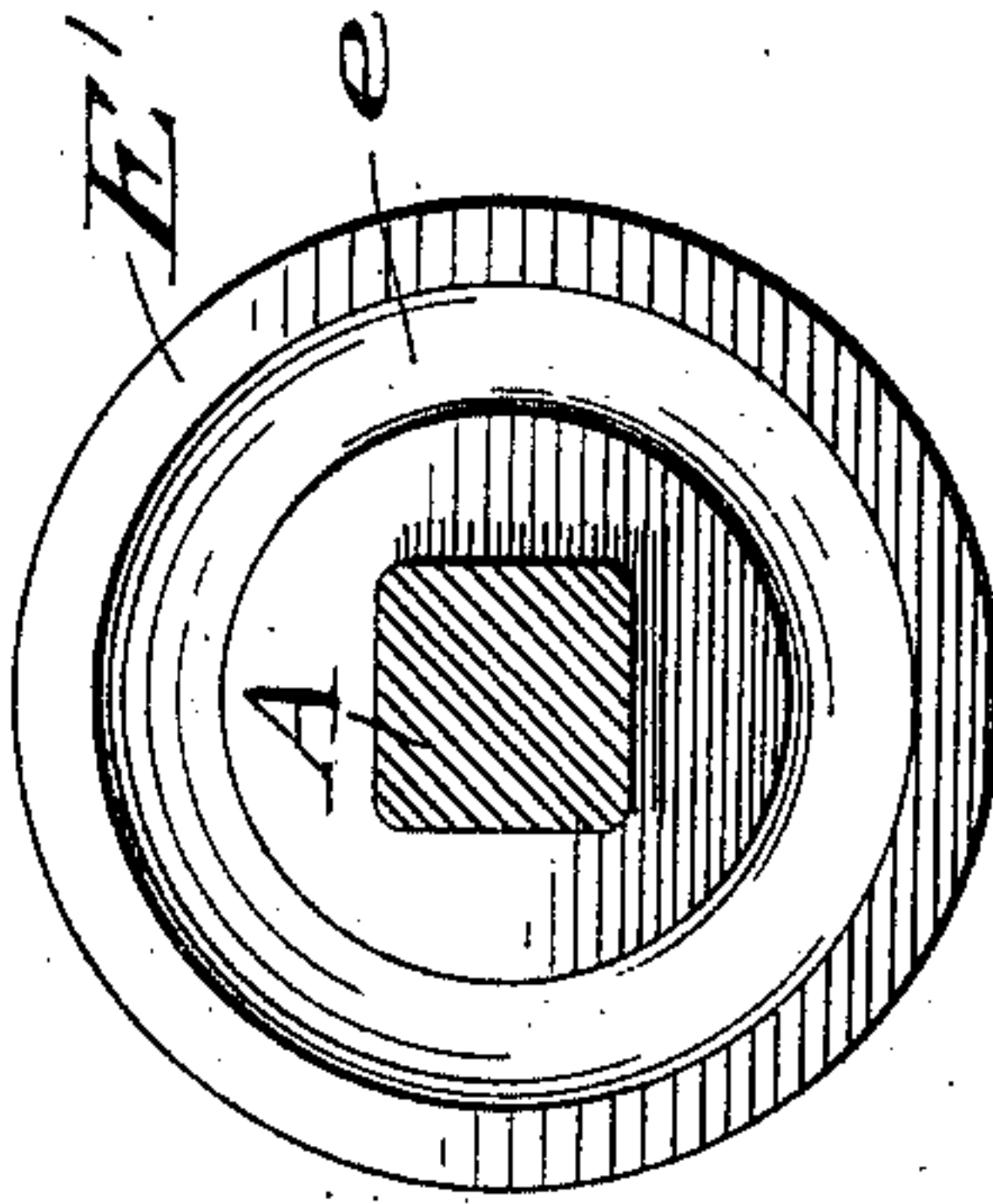


Fig. 4



Witnesses

B. H. H. H.
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Inventor

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By his Atty.

UNITED STATES PATENT OFFICE.

CHARLES M. ANDREWS, OF SOUTH BEND, INDIANA.

BALL-BEARING VEHICLE-HUB.

SPECIFICATION forming part of Letters Patent No. 584,838, dated June 22, 1897.

Application filed September 14, 1896. Serial No. 605,688. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. ANDREWS, a citizen of the United States, residing at South Bend, in the county of St. Joseph, State of Indiana, have invented certain new and useful Improvements in Ball-Bearing Vehicle-Hubs, of which the following is a specification.

My invention relates to ball-bearing vehicle-hubs which are applicable to either a wood or iron center.

The object of my invention is to provide a simple, strong, easily-adjustable, and durable device, with a minimum frictional resistance, which may be advantageously employed in connection with an axle shaped to suit the requirements for strength, the latter being made without reducing or finishing the end thereof to form a spindle, thus insuring greater strength and economy in its manufacture.

The invention consists in certain constructions and combinations of parts hereinafter particularly described with reference to the accompanying drawings, wherein—

Figure 1 is a longitudinal elevation of one end of the axle with the metal hub and ball-bearing device in section; Fig. 2, an elevation or face view of the said metal hub; Fig. 3, an elevation showing the inner face of one of the revoluble ball-bearing plates to be attached to the hub center with the axle in section, and Fig. 4 a view similar to Fig. 3 of one of the fixed ball-bearing plates attached to the axle.

The axle A is preferably made of a square bar of steel with slightly-rounded corners and with the ends *a* turned down and threaded to receive a nut B and drilled and tapped to receive a set-screw C, which may be adjusted to limit the adjustment of the nut upon the ball-bearing plates without binding them too closely upon the balls. A collar D, secured to the axle on the inner side of the hub, forms a stop.

An inner fixed ball-bearing plate E and a similar outer fixed bearing-plate E' are fitted upon the square axle respectively to bear against the collar D and against the inner face of the nut B and are each provided upon their inner and opposed faces with a ball-raceway *e* to receive hard-metal balls F, which run freely within the said raceway. The hub

center G has revoluble ball-bearing plates H H', secured, respectively, to the outer and inner faces thereof by bolts *g*, passing through said plates and screwing into the hub center, and the plates are each provided with a ball-raceway *h*, which oppose the ball-raceway *e* of the plate E and the plate E', and thus hold between them the balls F, which latter thus sustain the wheel-hub upon the axle to revolve freely thereon, the centers of the hub center and revoluble bearing-plates H H' being provided, respectively, with enlarged central apertures *g'* and *h'* to give sufficient clearance for this purpose.

The hub center is made of metal, as shown in the drawings, and has a follower-plate G', secured to the inner flange of the flange-plate *g*² thereof by bolts I, which pass through said follower-plate and flange-plate and also pass either through the spokes K or between them to secure the hub-center sections and spokes together.

The revoluble ball-bearing plates H H' are, as shown in the drawings, Fig. 1, provided each with a flange *h*² to project around the periphery of the fixed ball-bearing plates E E', respectively, and serve to protect the faces and raceway of the ball-bearing plates from mud or dust, and are also provided with inner hubs *h*³ to fit within recesses of the hub centers and relieve the bolts *g* of undue strain.

With the several parts constructed and combined as above described a ball-bearing may be provided for vehicle-wheels which will run lightly at high speed without the use of lubricants and will outwear any other part of the vehicle. The axle being made of bar-steel without reducing or fitting the end with a spindle will greatly reduce the weight and cost of construction, and being perfectly homogeneous will possess greater strength than axles ordinarily employed. The balls of the bearing are supported in such position relatively to the center of the load borne by them that no undue strain is brought upon the axle and that they will resist and take up the end as well as the vertical pressures to which the bearing is subjected.

The special form and construction of the journal-collars and hub face-plates provided with the ball-bearing raceways which will admit of easy application to and removal from

the axle and hub, respectively, is a valuable and distinguishing feature of my invention, as not only do I secure thereby a strong, compact, and dust-covered hub-boxing, but the
5 balls are supported upon steel bearings of sufficient area which are not liable to become broken and which, if broken, may be replaced at much less expense and with greater convenience than would be the case were the axle
10 broken.

I claim as my invention and desire to secure by Letters Patent—

A ball-bearing for vehicle-wheels, comprising a square bar-axle, having a reduced
15 threaded end, a nut fitted thereon, a collar

secured thereto at the inner side of the hub, an inner grooved fixed ball-bearing plate to abut against said collar, an outer ball-bearing plate to bear against the said nut, a hub having grooved face-plates to oppose the said 20 ball-bearing plates, and balls in said grooves and bolts for securing the ball-bearing plates in position, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in the 25 presence of two subscribing witnesses.

CHARLES M. ANDREWS.

Witnesses:

B. KRUEPER,

C. H. ZABITO.