

No. 677,215.

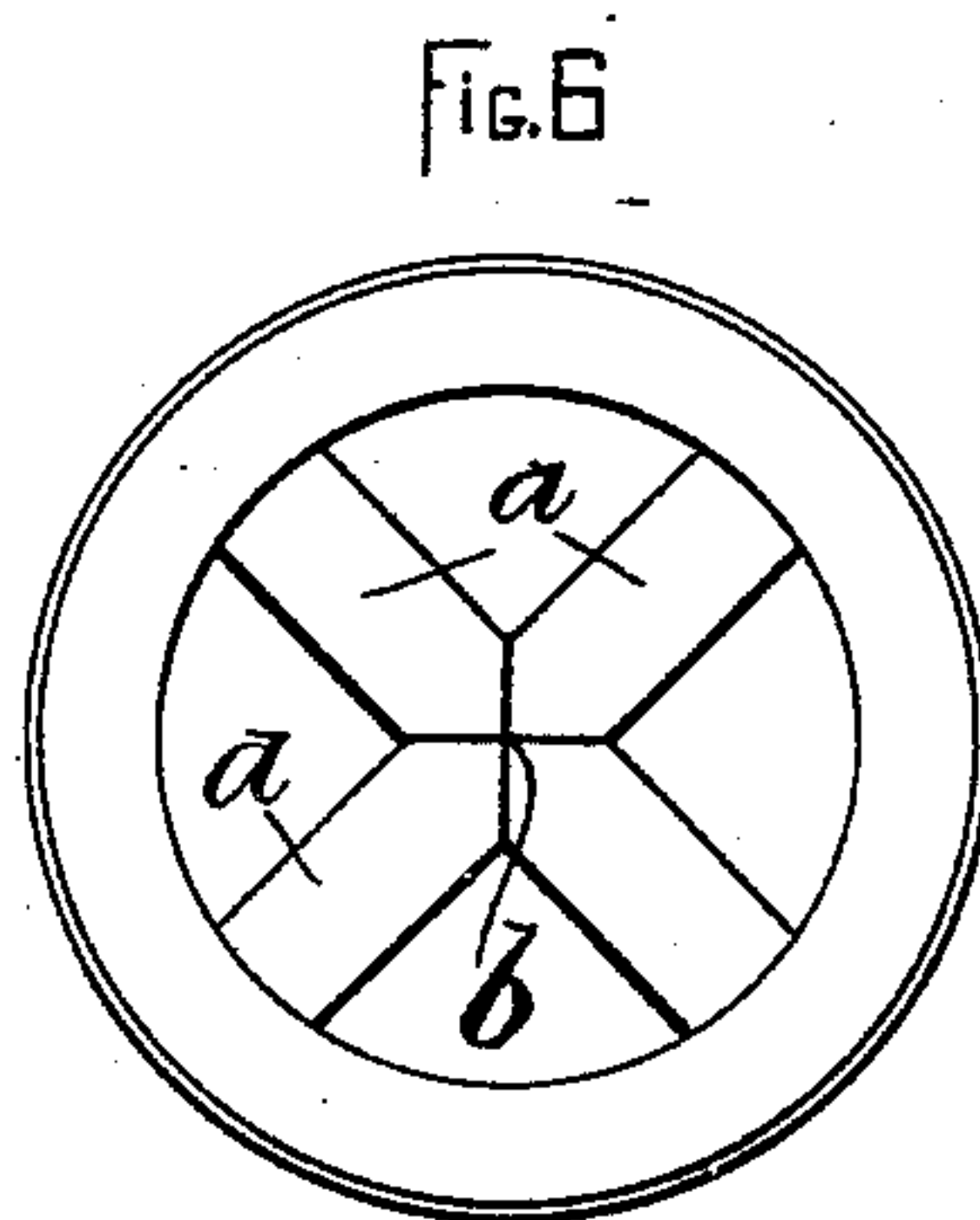
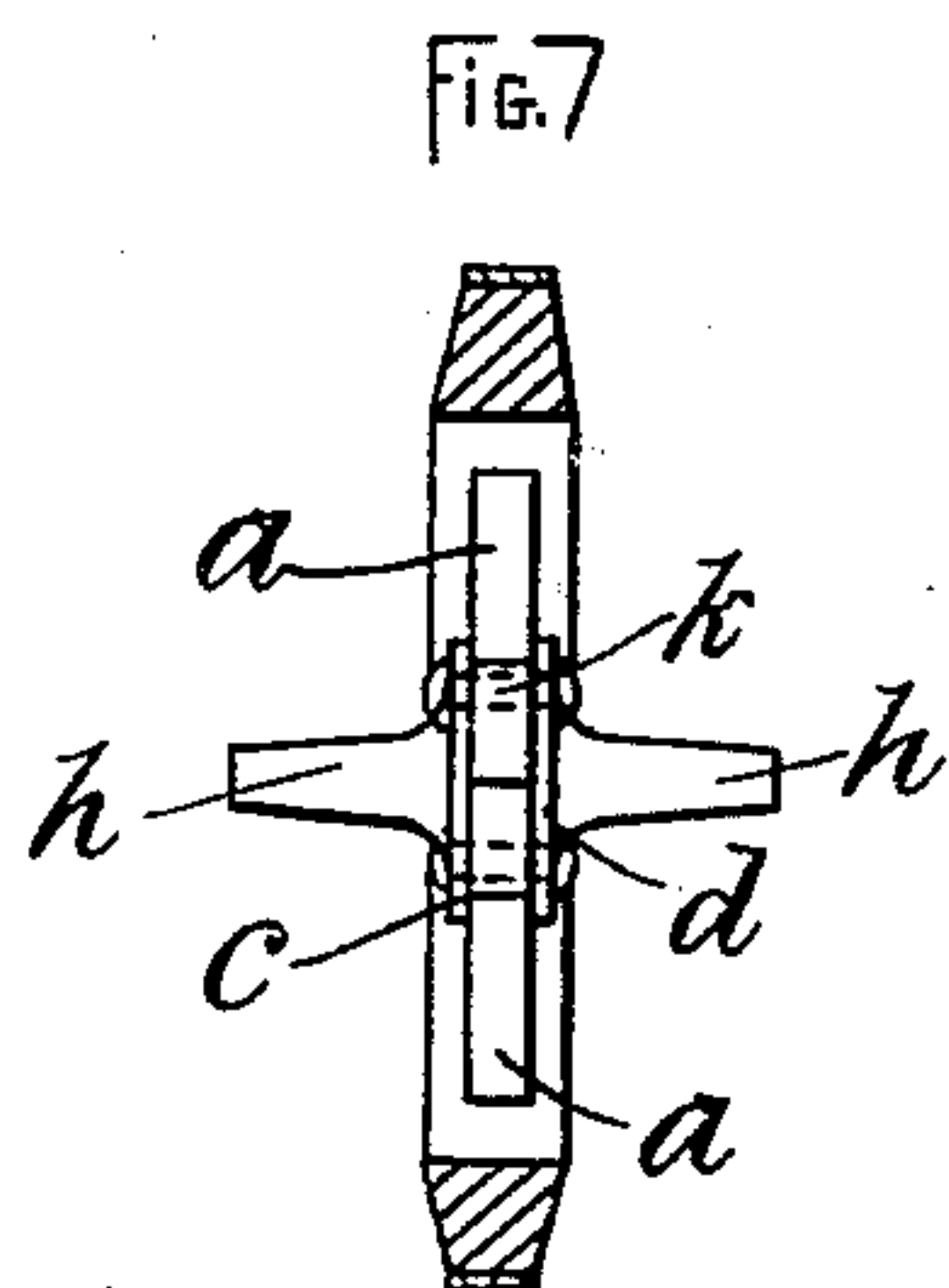
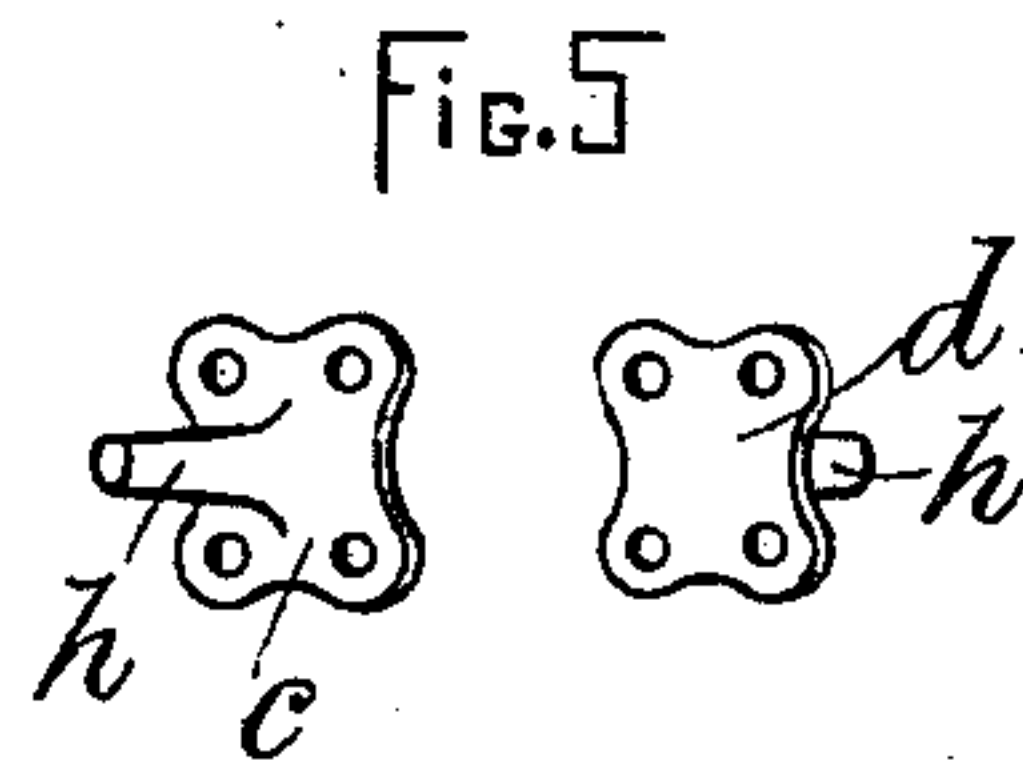
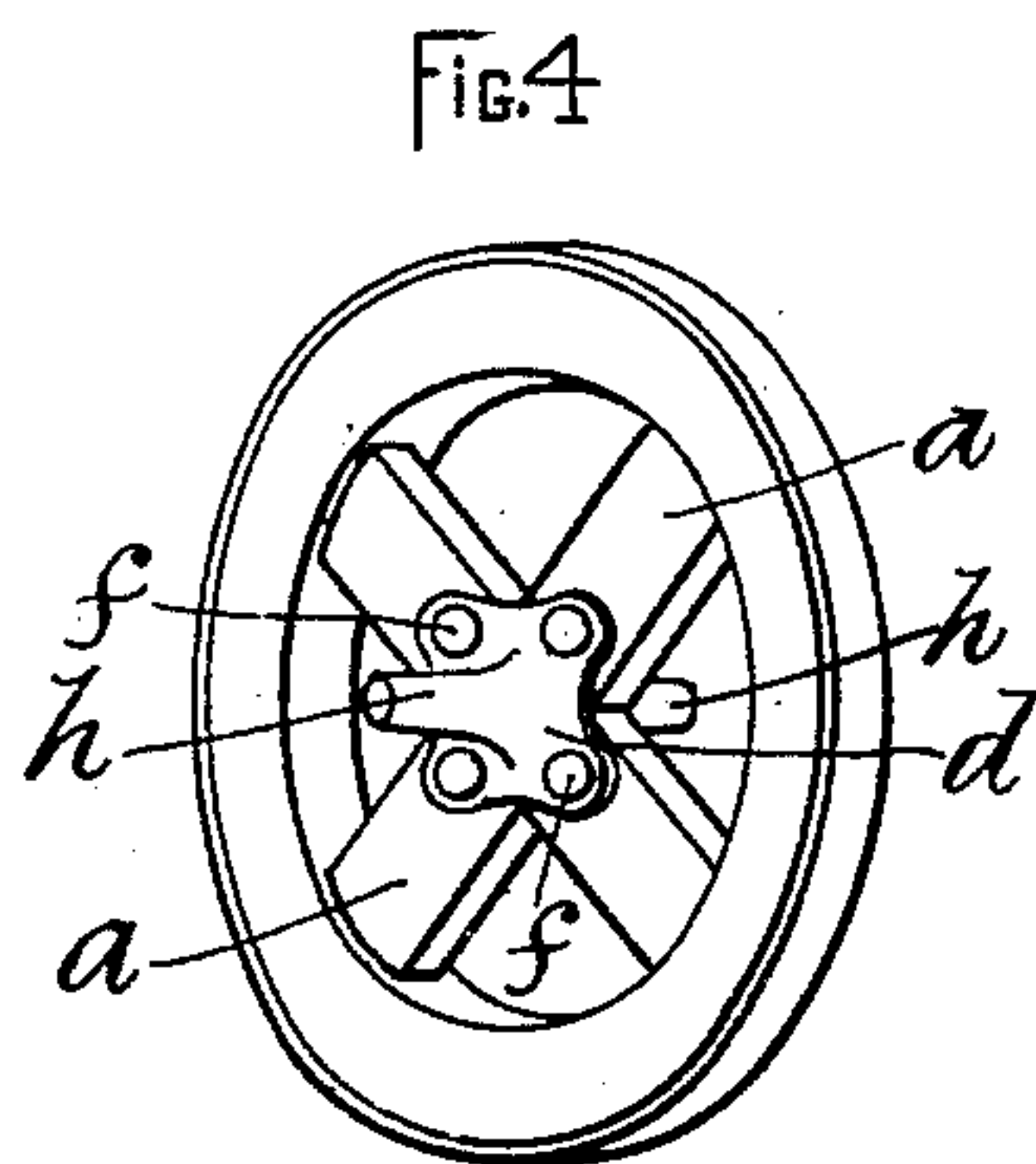
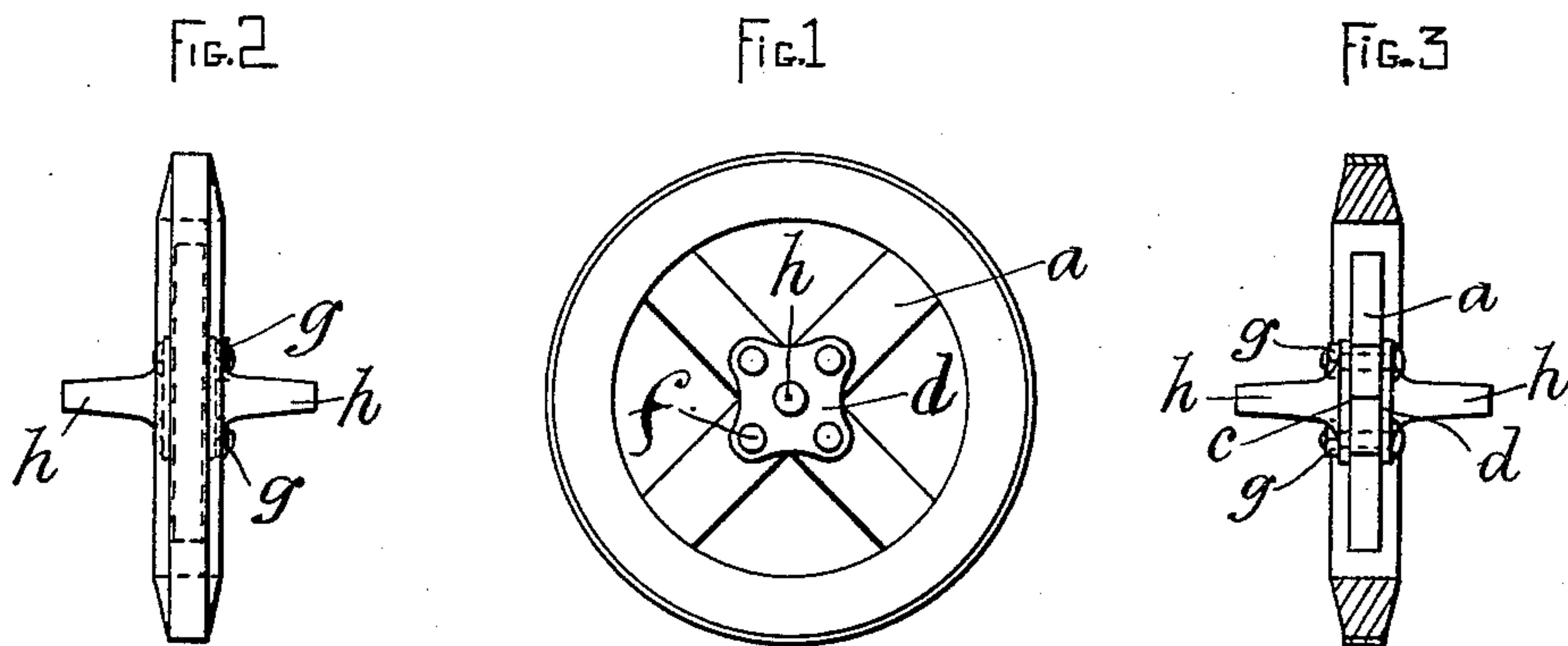
Patented June 25, 1901.

H. HOULDSWORTH, R. HOLMES & F. WHITAKER.

WHEEL FOR ROAD VEHICLES.

(Application filed Dec. 31, 1900.)

(No Model.)



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UNITED STATES PATENT OFFICE.

HENRY HOULDSWORTH, RICHARD HOLMES, AND FEATHER WHITAKER, OF
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WHEEL FOR ROAD-VEHICLES.

SPECIFICATION forming part of Letters Patent No. 677,215, dated June 25, 1901.

Application filed December 31, 1900. Serial No. 41,600. (No model.)

To all whom it may concern:

Be it known that we, HENRY HOULDSWORTH, RICHARD HOLMES, and FEATHER WHITAKER, subjects of the Queen of Great Britain, and residents, respectively, of Manville Terrace, Park Lane, and Holker street, all in Keighley, in the county of York, England, have invented certain new and useful Improvements in Wheels for Road-Vehicles, of which the following is a specification.

Our invention relates to wheels for road-vehicles of the class used with wheelbarrows, hand-trucks, and like vehicles, wherein the wheels are subjected to considerable strains by reason of the varied directions in which the forces they have to withstand are brought against or to act upon them through the many movements and varied and irregular conditions under which they are employed; and the object of our invention is the production of a wheel that shall be sufficiently strong to withstand all such actions and yet shall be as light as or lighter than those as heretofore constructed, while the cost of its production shall be comparatively small.

We attain the object of our invention by following the method of construction hereinafter described, and as illustrated by the accompanying sheets of drawings, in which—

Figure 1 is a side elevation of a wheel of the class usually employed in connection with wheelbarrows, but which is constructed in accordance with our invention. Fig. 2 is an edge view of same. Fig. 3 is a vertical section of the parts shown by Fig. 2. Fig. 4 is a perspective view of the wheel constructed in accordance with our invention. Fig. 5 is a perspective view of the axial parts as removed from the wheel. Fig. 6 is a side elevation of a portion of the wheel to show how the parts are formed to be joined together. Fig. 7 is a vertical section illustrating a modification hereinafter explained.

Similar letters of reference indicate similar parts throughout the several views.

In carrying our invention into effect the wooden arms or spokes *a* are made in separate parts, all of equal thickness and formed to converge in the center *b*, where they fit firmly against each other, as shown by Fig. 6, their other ends being let into their respec-

tive felloes in the usual manner. In order that said spokes may fit firmly against and sustain each other at their inner ends without depending upon any additional or separate part or element, their inner or converging ends are beveled and pointed, so that their points may meet at the center of the wheel.

The converging ends of the spokes *a* are secured together by the clamping-pieces *c d*, mounted on both sides to have bolts *f* to pass through them, to be there secured by the nuts *g*, by which means these said spokes are more firmly held and are enabled to more firmly withstand any strains or forces acting upon them than when constructed as heretofore. The clamping-pieces *c d* are formed of cast metal and have projections or protuberances *h*, constructed integrally with them, so that while acting as clamping-pieces to bind and firmly hold the spokes *a* together they also form an appropriate, substantial, and thoroughly-efficient axle to support the wheel during its rotations or use, and one that cannot deteriorate, become loose, and fall out of position as readily as do those as heretofore employed, and yet their cost of production and the cost of displacing any of the spokes should by accident or otherwise any one of them be broken or damaged is less and entails less labor than does the displacement of said usual kind of axles and spokes.

Instead of using the bolts *f* and nuts *g* for securing the clamping-pieces, pins of wrought metal *k* may be cast into one or other of the pieces *c* or *d*, as, say, the one *c*, while their other ends may enter openings made in the other piece *d*, to be there firmly clenched or riveted to hold same as desired, as shown by Fig. 7.

Having thus described the nature and object of our said invention, what we claim is—

1. A wheel of the class described having its spokes beveled and pointed at their inner or converging ends and bearing against each other with their points meeting at the center of the wheel, and means for retaining the spokes in said relative positions.

2. A wheel of the class described having its spokes beveled and pointed at their inner or converging ends and bearing against each

other with their points meeting at the center of the wheel, clamping-pieces resting against opposite sides of the spokes, and means for securing said clamping-pieces and
5 spokes together.

3. In a wheel of the class described, spokes made to radiate from a central position, clamping-pieces secured to said spokes, and projections on said clamping-pieces to form the
10 axle of the wheel substantially as specified.

4. In a wheel of the class described, clamp-

ing-pieces with pins or rivets cast into one of them and formed to be clenched upon after passing through the other of them and through the other part of the wheel substantially as herein specified. 15

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