

No. 624,219.

Patented May 2, 1899.

E. KLAHN.
BALL BEARING.

(Application filed Aug. 22, 1898.)

(No Model.)

FIG. 1.

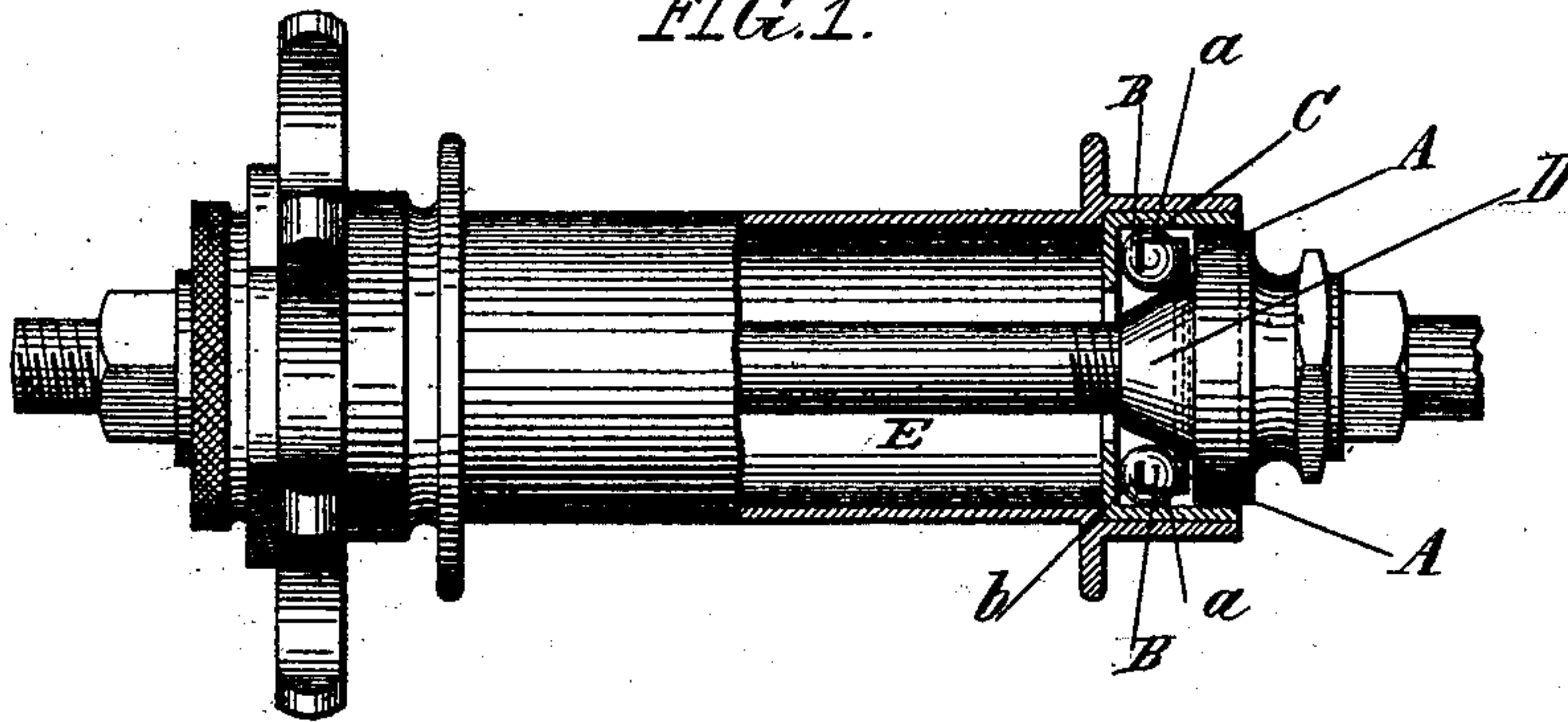


FIG. 2.

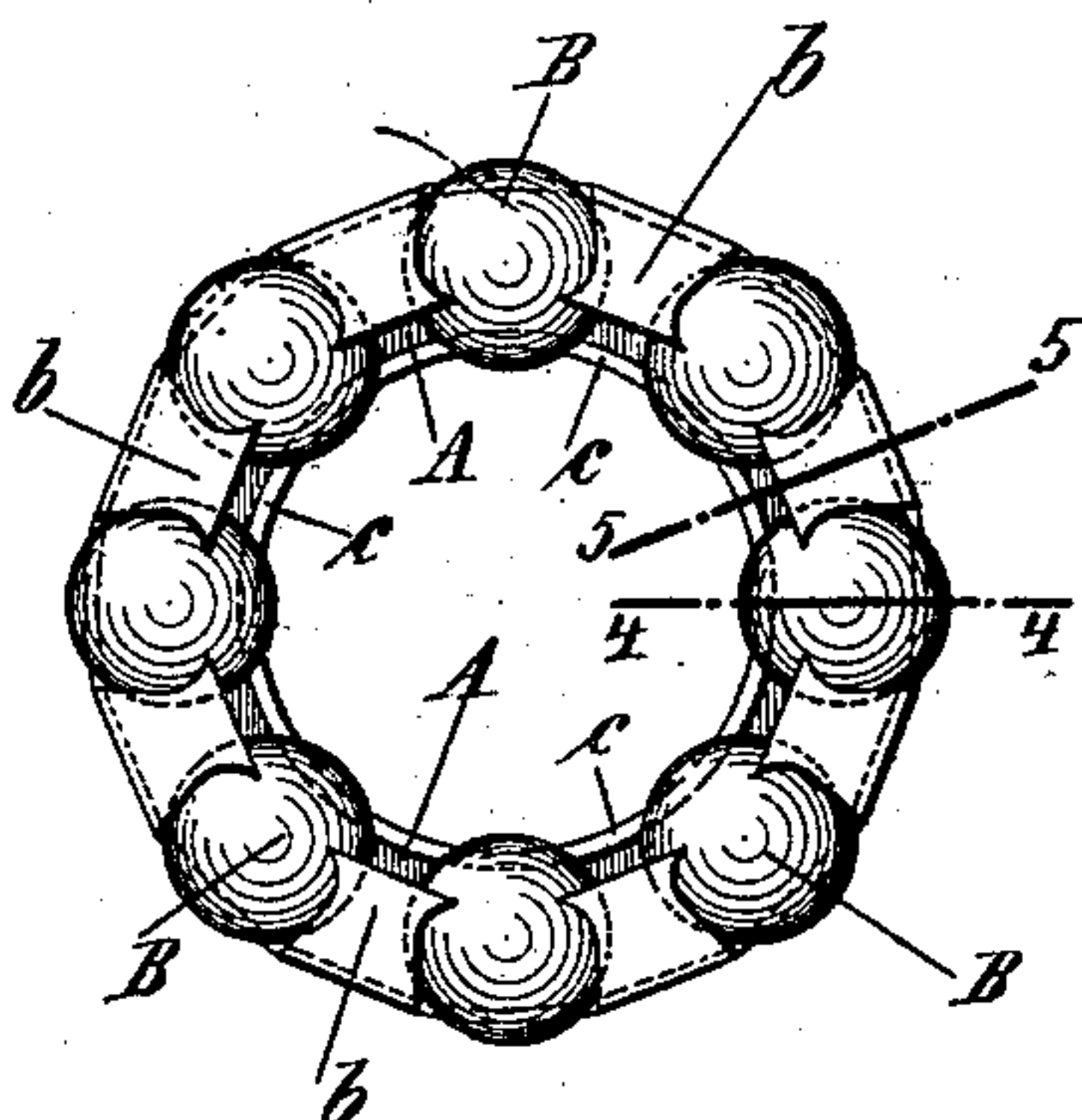


FIG. 3.

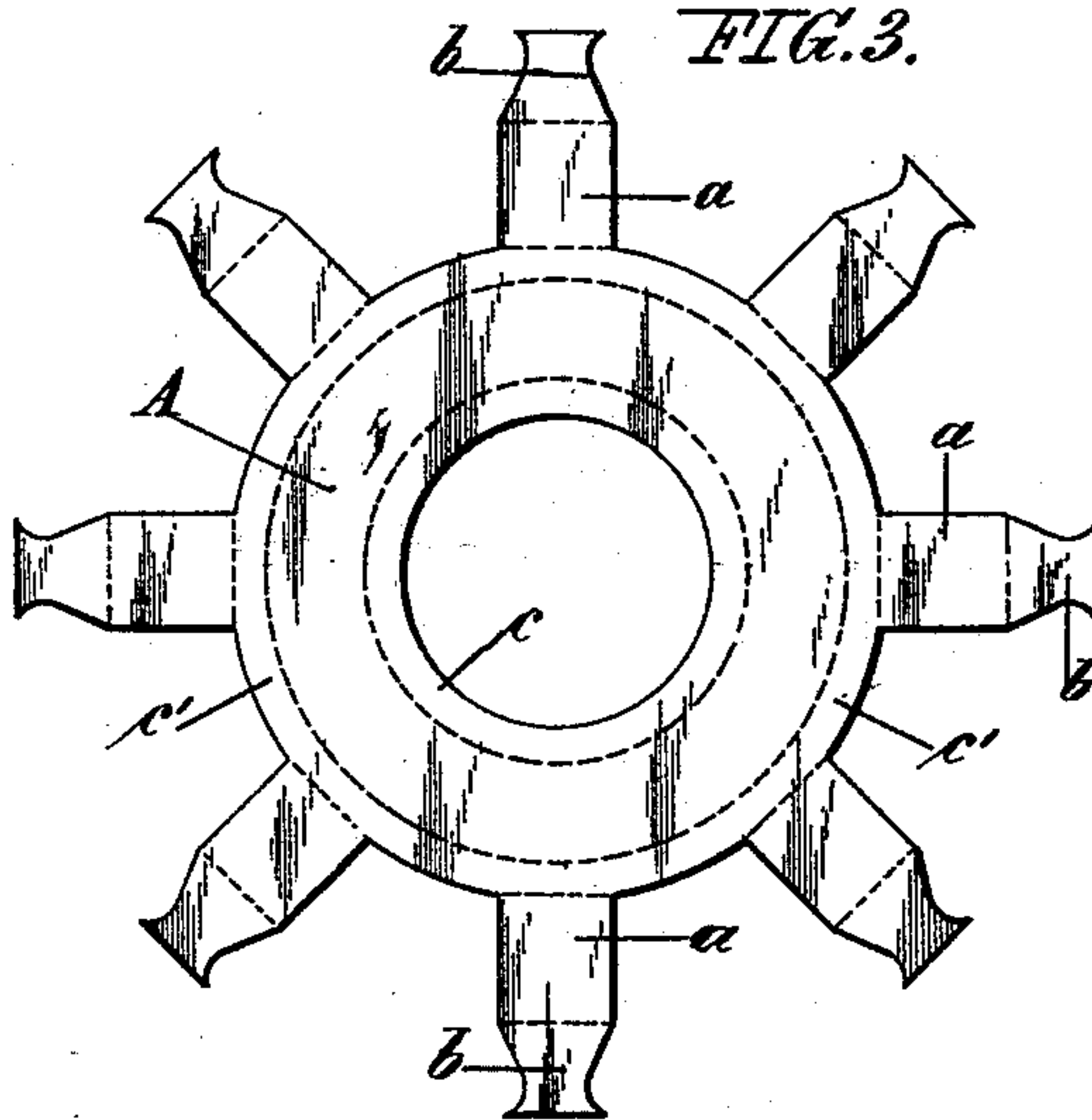


FIG. 4.

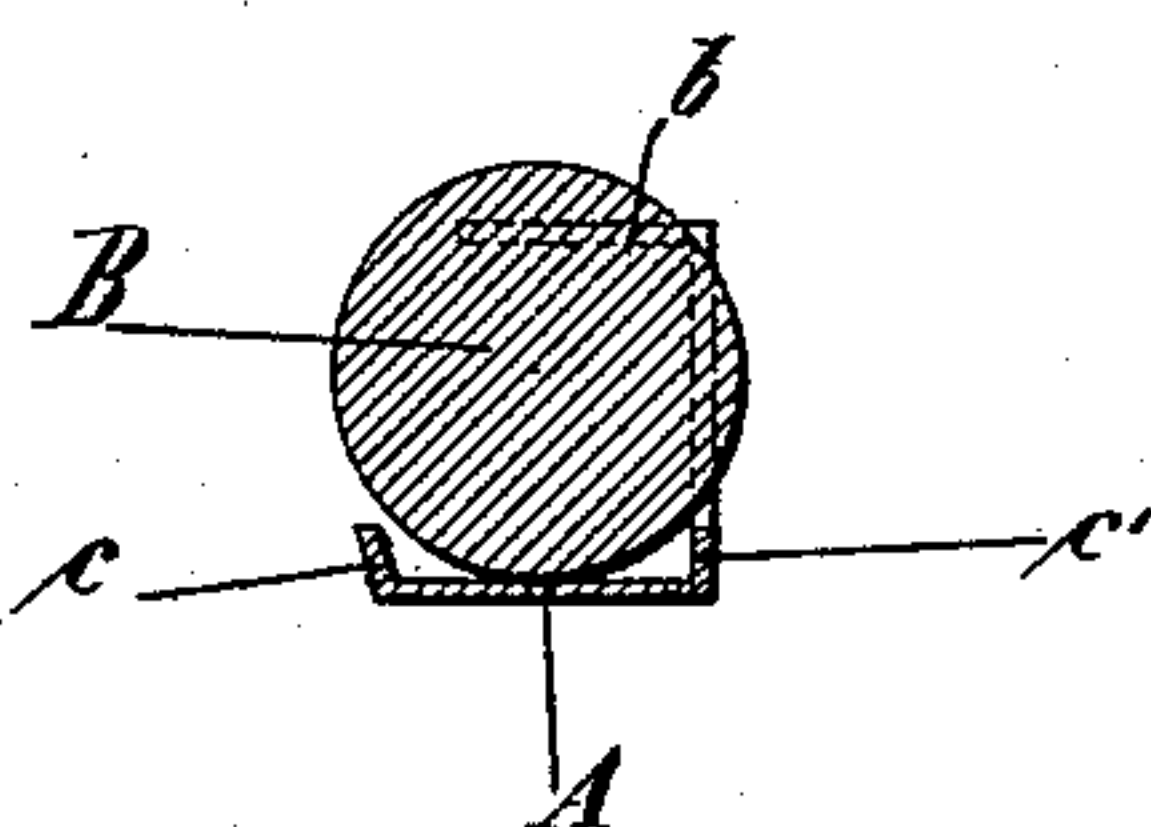
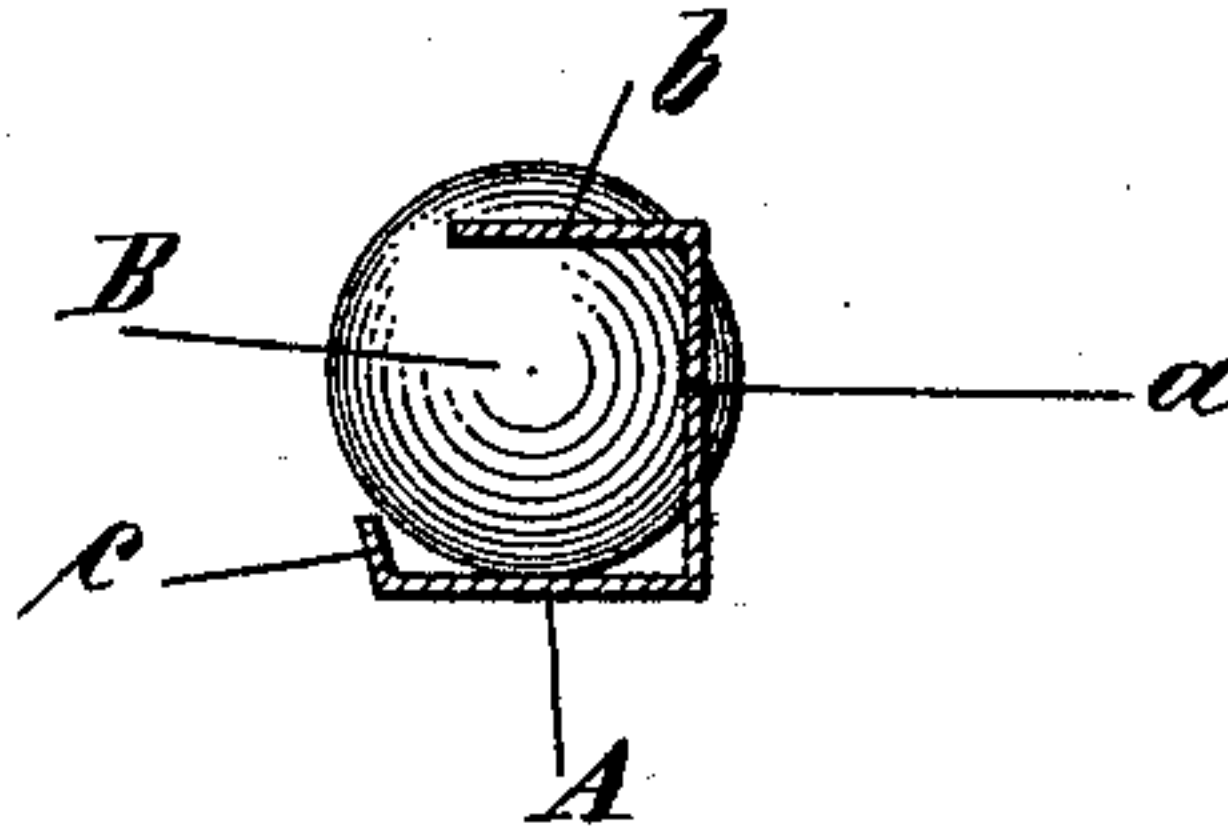


FIG. 5.



WITNESSES:

Bruno von Rützelowien
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EMIL KLAHN, OF WEST HOBOKEN, NEW JERSEY.

BALL-BEARING.

SPECIFICATION forming part of Letters Patent No. 624,219, dated May 2, 1899.

Application filed August 22, 1898. Serial No. 689,216. (No model.)

To all whom it may concern:

Be it known that I, EMIL KLAHN, a citizen of the United States, and a resident of West Hoboken, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Ball-Bearings, of which the following is a specification.

My invention has reference to improvements in ball-retaining devices for ball-bearings, and has for its purpose to provide a device by which the balls in the bearings are kept separate from each other and the friction therein is prevented. These objects are obtained by the construction shown in the accompanying drawings, in which—

Figure 1 represents a hub, partly in section, showing the manner in which the ball-retaining devices are applied. Fig. 2 shows a top view of the device. Fig. 3 is a blank of which the said device is made. Fig. 4 is a section on line 4 4 of Fig. 2, and Fig. 5 is a section on line 5 5 of Fig. 2.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a flat ring-shaped base, of sheet metal, which on its outer and inner boundaries is provided with rims c' and c , both extending outwardly in the same direction. The outer rim c' has a series of flaps a , radiating from the center of the ring-base and bent in line with the rim. These flaps terminate in extensions b , the lateral edges of which are concavely cut out, so that sharp points on the end portion of the extensions, as well as on the points of connection of the flaps and the extensions, are produced. The extensions b are bent inward above the ring-base, so that the flaps a on the rim c' stand in a right or nearly right angle and the extensions b are in a parallel or nearly parallel position to the base.

The balls B are placed upon the ring-shaped base into the spaces which are created by the flaps and extensions bent in the described manner and are held in place between the rims of the base by the lateral edges of the flaps and the pointed end portions of the extensions, the concave lateral edges of the latter allowing the balls to revolve freely in the

device. The balls cannot be removed from the device without bending the flaps and extensions to the outside. The rims of the ring-shaped base serve not alone to hold the balls in place, but also to impart to the base a greater rigidity.

The ball-retaining devices are applied to a ball-bearing in the following manner: The devices are placed into the cups C of the hub, and the cones D are then placed upon the ends of the shaft E, so that the devices are inclosed in the chambers created by the cups and cones, and the balls held in the devices come with their portions projecting beyond the retaining-flaps and extensions and the rims in close contact with the cups and cones of the bearing. The cones of the shaft can then freely rotate within the cups of the bearing or the cups around the cones, as the case may be.

It is a well-known fact that in the common ball-bearings friction is often caused by the circumstance that the balls are not precisely of the same diameter, whereby a sliding instead of a revolving motion of one or more balls is obtained, so that the bearings are worn out in a comparatively short time. Such friction cannot occur in ball-bearings with my improved ball-retaining devices, as those balls which are of too small a diameter will be carried along without causing any friction or other injury.

I am aware that ball-retaining devices consisting of ring-shaped bases with flaring and bent flaps are known, and I do not claim such devices broadly.

What I claim is—

1. A ball-retaining device for ball-bearings, consisting of a flat ring-shaped base having at its inner and outer boundaries rims projecting from the base outwardly in the same direction, the outer rim having a number of flaps extending at intervals in line with the rim, and of extensions flaring inwardly from the flaps in parallel position with the base and having their lateral edges concavely cut out, substantially as set forth.

2. The combination of a flat ring-shaped base having at its inner and outer boundaries

rims projecting from the base outwardly in the same direction, a series of flaps extending at intervals from the outer rim in line with the same, and extensions flaring inwardly
5 from the flaps in parallel position with the base and having their lateral edges cut out, with balls located on the flat base in the spaces created by the flaps and cut-out extensions, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 19th day of August, A. D. 1898.

EMIL KLAHN.

Witnesses:

G. E. STRAUSS,
B. S. AUGSBURGER.