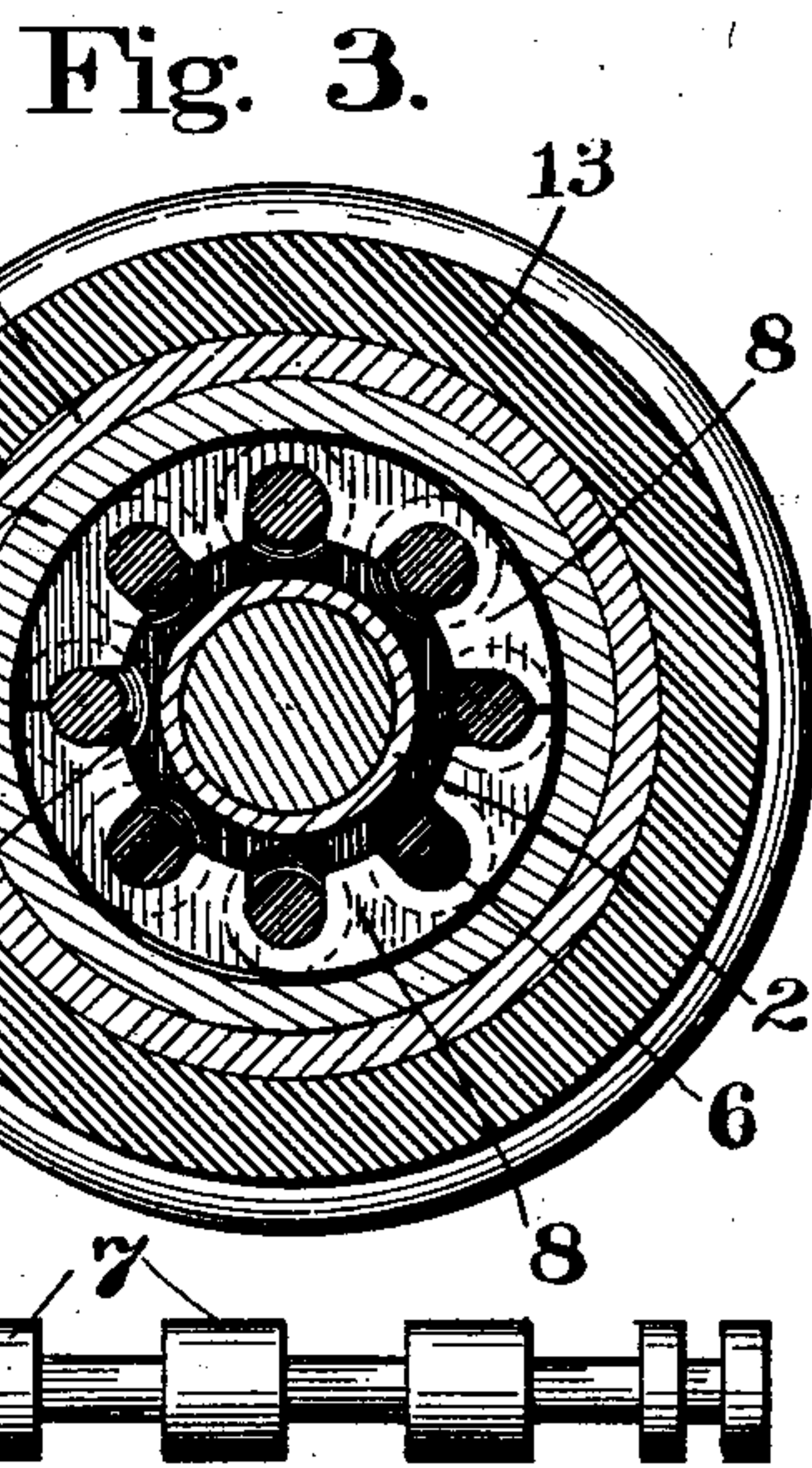
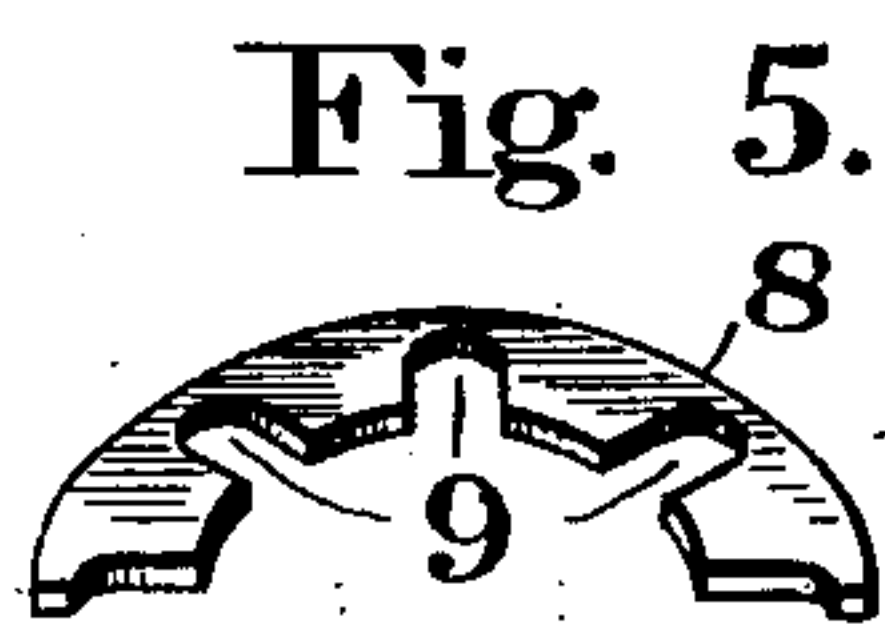
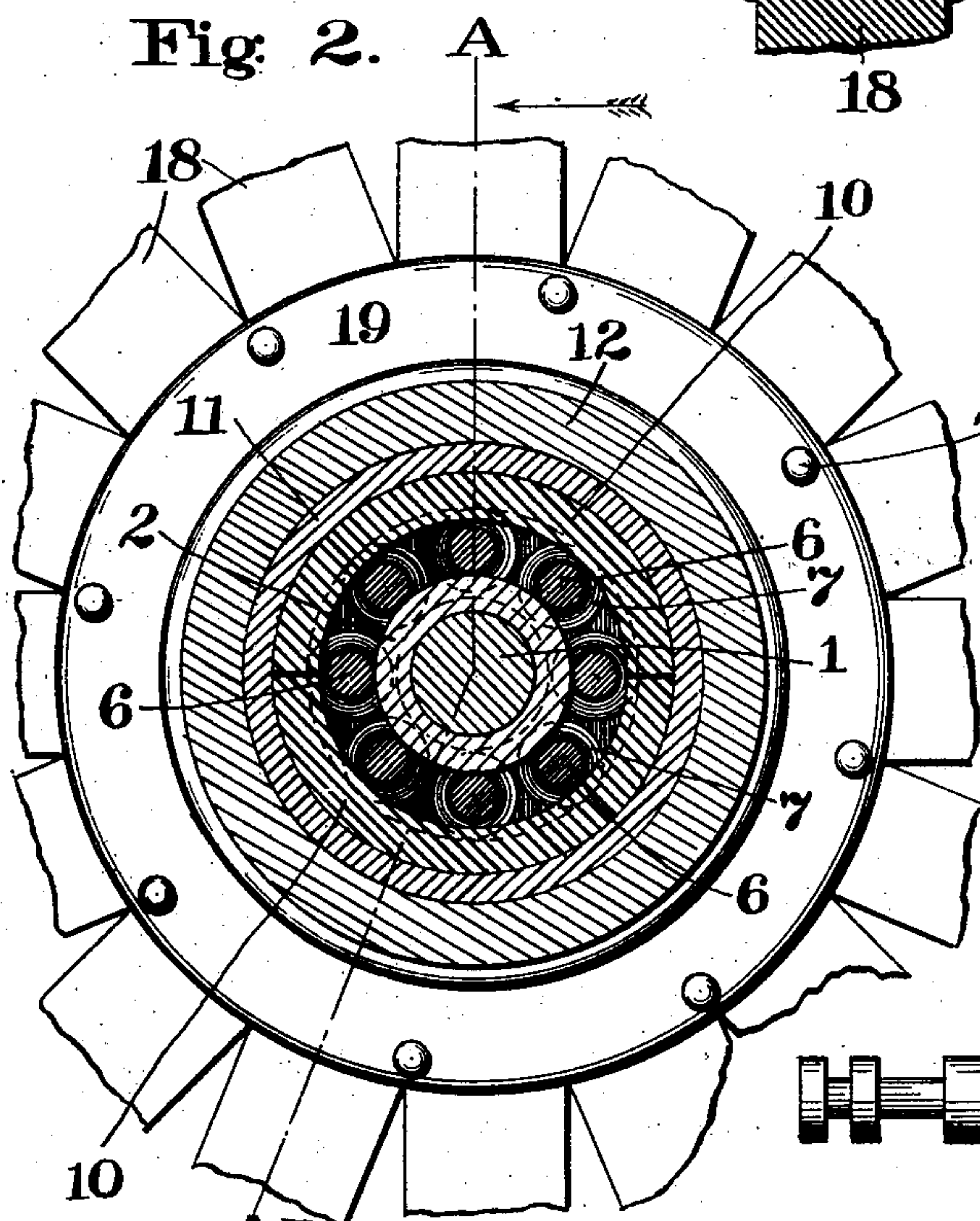
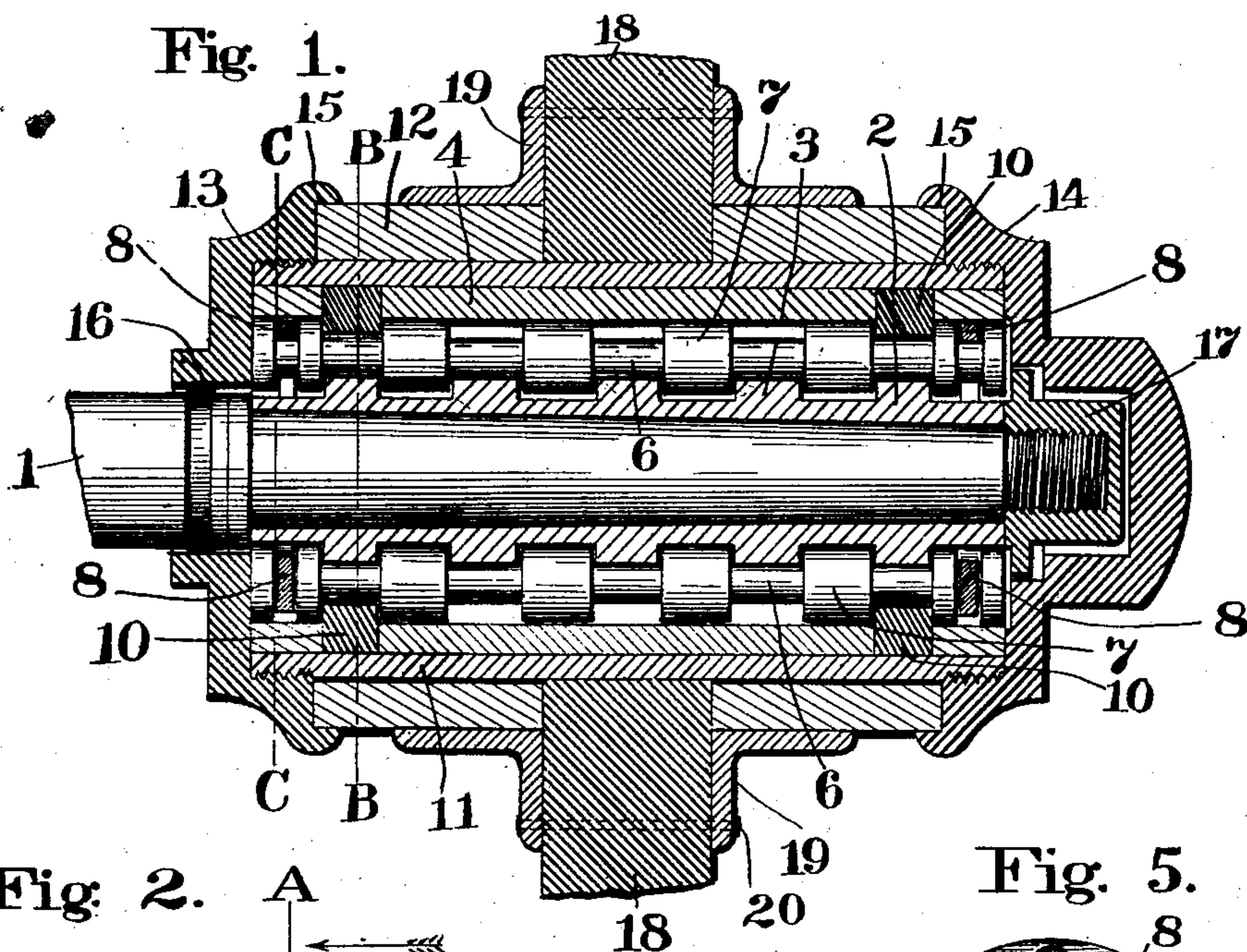


No. 747,512.

PATENTED DEC. 22, 1903.

G. N. TOMS.
ANTIFRICTION DEVICE.
APPLICATION FILED APR. 15, 1903

NO MODEL.



Witnesses

Percy C. Bowen
Milton Lenoir.

Inventor

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by *James Hamilton*
Attorney

UNITED STATES PATENT OFFICE.

GEORGE N. TOMS, OF BOSTON, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE FRICTIONLESS ROLLER BEARING COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MAINE.

ANTIFRICTION DEVICE.

SPECIFICATION forming part of Letters Patent No. 747,512, dated December 22, 1903.

Application filed April 16, 1903. Serial No. 152,683. (No model.)

To all whom it may concern:

Be it known that I, GEORGE N. TOMS, a citizen of the United States, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Antifriction Devices, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to improvements in roller-bearings, and particularly to that class in which proportional circles of rotation are used.

The object of my invention is to provide an antifriction device which shall be simple and cheap in construction, easily assembled, and efficient in operation.

In the drawings I have shown my device as applied to an ordinary wheel and axle; but I desire it to be distinctly understood that I do not confine myself to that embodiment of my invention, for my invention may be applied to many other uses than the one herein specifically shown and described.

In the drawings, Figure 1 is a sectional view on the line A A, Fig. 2. Fig. 2 is a sectional view on the line B B, Fig. 1. Fig. 3 is a sectional view on the line C C, Fig. 1. Fig. 4 is a detail illustrating the roller-shaft, and Fig. 5 is a detail showing the separator-ring.

1 is a standard axle upon which is a sleeve 2, having formed on its outer cylindrical surface a plurality of enlargements 3, and 4 is the inner casing, made up of three rings, as is clearly shown in Fig. 1.

Between the sleeve 2 and the rings that form the inner casing 4 are interposed a plurality of roller-shafts 6, each of which is formed with a plurality of collars 7. At the ends of each shaft 6 the collar is split or recessed, as shown in Fig. 4, to receive a thin, flat, or disk-like separator-ring 8, which is illustrated in perspective in Fig. 5 and in elevation in Fig. 3. The separator-rings 8 are made in two parts or split, as is shown in Fig. 3. This construction permits of the ready assembling of the roller-shafts in position. The separator-rings are formed on

their inner edge with recesses 9, and in these recesses 9 the roller-shafts 6 engage and are held in proper relative position. Between the rings that form the inner casing 4 are interposed split thrust-rings 10, which prevent lengthwise movement of the roller-shafts 6. These split thrust-rings are shown in elevation in Fig. 2. The ratio of the diameter of the roller-shaft 6 to the diameter of the enlargement 3, upon which it rides, is equal to the ratio of the diameter of the collar 7 to the inner wall of the inner casing 4, upon which said collars 7 ride.

The outer casing 11 projects at both ends beyond the wooden hub 12 and its projecting ends are formed with screw-threads, and are thereby adapted to engage the caps 13 and 14, as is shown in Fig. 1. These caps 13 and 14 are formed with annular recesses 15, within which the wooden hub 12 is fitted, and they therefore serve not only as dust-caps, but also as retaining devices for the hub 12 and the parts of the roller-bearing. A washer of felt or like material 16 serves to aid in the exclusion of dust and moisture on the inside of the structure.

The outer end of the axle 1 is screw-threaded to receive a retaining-nut 17, which is flanged, as shown, and serves to hold the sleeve 2, and through it the roller-shafts 6 and other parts, upon the axle 1.

The spokes 18 are fitted between the flanged bands 19 and secured in the usual manner by the rivets 20.

I believe that the new roller-bearing herein described and shown is the only roller-bearing having the following characteristics and at the same time applicable to an axle having a tapering end: The sleeve 2 extends the length of the axle end and is formed with a conical bore which makes it adaptable to a taper-end axle, and the roller-shafts 6 extend the length of the sleeve 2, the collars 7 riding upon the rings of the inner casing 4, while the roller-shafts ride upon the enlargements 3 of the sleeve 2. The thin recessed split separator-rings 8 space the roller-shafts circumferentially around the sleeve 2 and serve as bearings for the said shafts 6. The spaces

between the collars 7 being too long to admit of the use of a thin separator-ring 8 I groove circumferentially the end collars to receive said thin rings 8. The nut 17 retains the sleeve 2 and the roller-shafts 6, aided by the split thrust-rings 10, against lengthwise displacement, while the caps 13 and 14 hold the several parts of the structure together in assembled relation as well as exclude dust.

10 What I claim is—

1. An antifriction device made up of the following instrumentalities: a shaft; a sleeve upon said shaft, said sleeve being formed with a plurality of enlargements; a plurality of roller-shafts formed with a plurality of collars, which collars ride upon an inner casing while the portions of said roller-shafts between said collars ride upon said enlargements; a pair of thin two-part separator-rings formed with recesses within which said roller-shafts engage; said inner casing made up of a plurality of rings; a plurality of two-part thrust-rings which are interposed between the rings of said inner casing and which project inwardly each between a pair of the collars on each of said roller-shafts; and an outer casing.

2. The combination with an axle; a wheel-hub; an outer casing projecting beyond said hub at each end; and an antifriction device interposed between said axle and casing; of caps each formed with an annular recess adapted to inclose the end of said hub and a second annular recess formed with screw-threads to interlock with the projecting end of said casing.

3. The combination of an axle; a sleeve formed with a plurality of enlargements and extending the length of the end portion of said axle; a plurality of roller-shafts which extend the length of said sleeve and are formed with collars which engage between said enlargements; thin two-part spacing-rings which are formed with recesses within which said roller-shafts engage and which are fitted into narrow peripheral grooves in

said collars; thrust-rings which project inwardly between said collars; an inner casing upon which said collars ride; an outer casing; and a cap adapted to engage said outer casing.

4. The combination of a hub; an axle; an outer casing; an antifriction device mounted upon said axle; a flanged retaining-nut which holds said device upon said axle; and caps each formed with a plurality of recesses, one of which incloses the end of said hub, a second of which is screw-threaded to engage the projecting end of said casing, and the other of which receives said nut; said casing projecting beyond said hub at each end.

5. The combination of an axle having a tapering end; a sleeve fitting on and extending the length of said end, and formed with a series of circumferential grooves; rollers portions of which enter said grooves; an inner casing which coacts with said rollers; an outer casing; a wheel-hub; and a pair of caps adapted to lock said outer casing and wheel-hub together.

6. In a roller-bearing, the combination of an axle having a tapering axle end; a sleeve formed with a series of circumferential grooves and adapted to fit on said axle end; a plurality of roller-shafts formed with a plurality of collars; said collars engaging in said grooves; two-part separator-rings for spacing said shafts; a casing made up of a plurality of rings; thrust-rings interposed between the rings of said casing; an outer casing; a wheel-hub surrounding said outer casing; and a pair of caps adapted to lock said hub, outer casing and casing-rings in their relative positions.

In testimony whereof I have hereunto set my hand at said Boston, in the presence of two witnesses, this 8th day of April, A. D. 1903.

GEORGE N. TOMS.

Witnesses:

JOHN F. BRIRY,
CHAS. D. SPENCER.