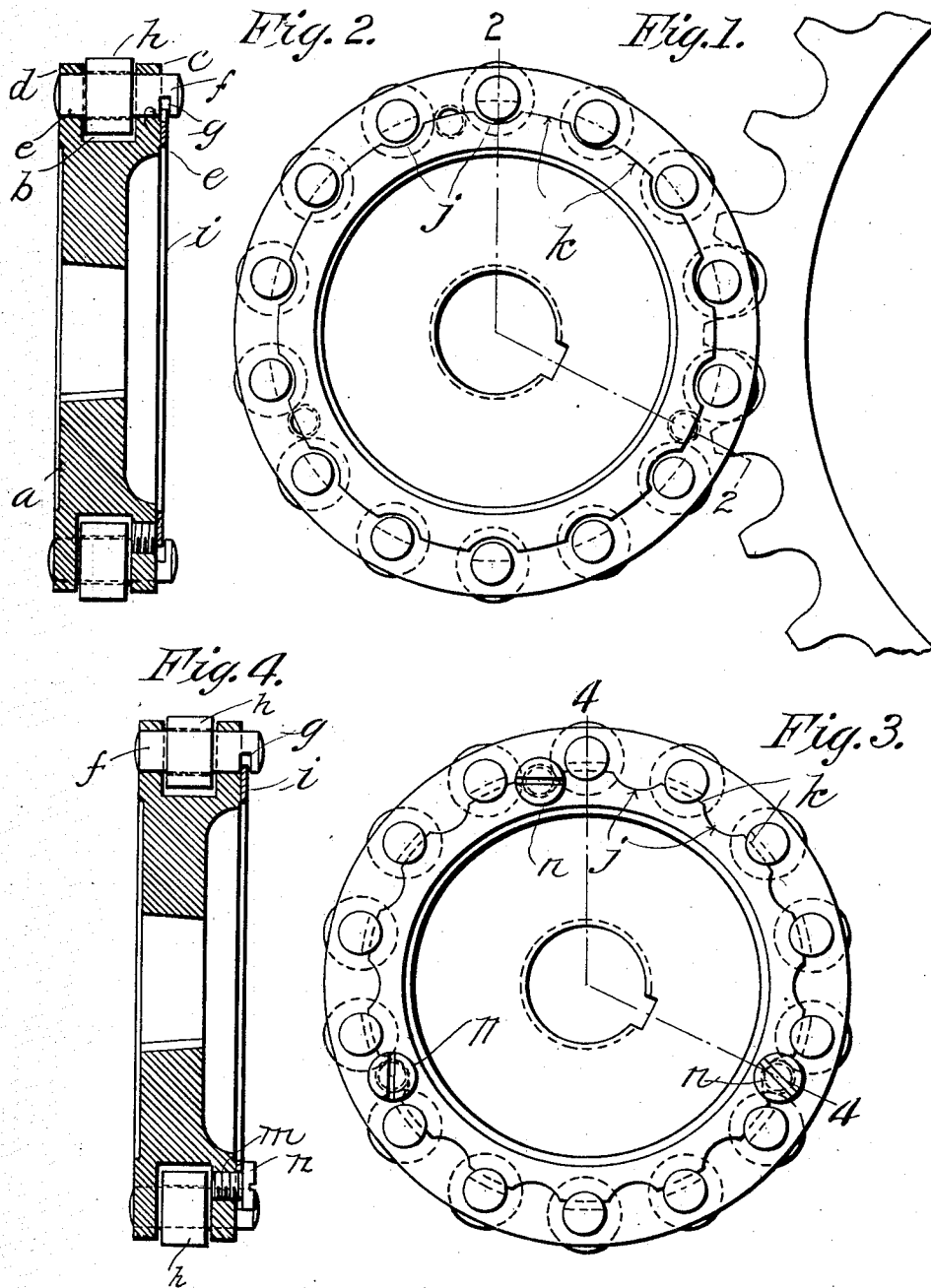


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PATENTED JULY 16, 1907.

R. W. ELLINGHAM.
ROLLER PINION.

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Witnesses:
H. L. Sprague
H. W. Brown.

Inventor.
Robert W. Ellingham.
Chapin & Co.
by Attorneys.

UNITED STATES PATENT OFFICE.

ROBERT W. ELLINGHAM, OF SPRINGFIELD, MASSACHUSETTS.

ROLLER-PINION.

No. 860,536.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ROBERT W. ELLINGHAM, a citizen of the United States of America, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Roller-Pinion, of which the following is a specification.

This invention relates to gearing and more particularly to means for reducing the friction and wear of the teeth of pinions. The means hereinafter described for accomplishing this result consist broadly in providing a series of pins with anti-friction rollers mounted thereon, the pins being arranged on the periphery of the pinion; also means for simultaneously locking the series of roller-carrying pins against displacement, said means consisting of a ring carried by the body of the pinion and a device for securing the said locking means to the pinion.

The invention is more particularly adapted to motor cycles, the pinion of which carrying the anti-friction rollers being mounted on the shaft of the driving motor and meshing with the spur teeth of the driving gear of the motor cycle. It has been found by experience that in this class of machines, on account of the high speed of the motor, the teeth of the pinion, after a few months use, become badly worn reducing the efficiency of the machine and rendering the motor cycle somewhat noisy in its operation, the pinion being designed to overcome these defects, as stated in detail farther on.

In the drawings forming part of this application,—Figure 1 is a side elevation of my improvement showing a portion of the sprocket-wheel in mesh with the anti-friction rollers of the pinions. Fig. 2 is a vertical sectional view on the line 2—2, Fig. 1. Fig. 3 is a side elevation of the pinion showing the locking plate secured to the wheel or pinion after being rotated so as to lock all of the pins in place which carry the anti-friction sleeves or rollers. Fig. 4 is a vertical sectional view on line 4—4, Fig. 3.

Referring to these drawings in detail, *a* designates the body of the pinion, the periphery of which is provided with a groove *b* producing the two flanged portions *c* and *d* which, at equally spaced points are drilled, as indicated at *e*, for receiving a series of roller carrying pins *f*. In the outer end of each pin is cut or milled a slot or recess *g* of suitable depth from the outer edge, as shown, and practically on the diametrical line of the pin. These pins are for the purpose of rotatably supporting a series of hardened anti-frictional sleeves or rollers *h* which, it will be noticed, extend slightly above the periphery of the pinion *a* and are located in the groove *b*, as clearly shown in Figs. 2 and 4.

After the pins and rollers are assembled, it is neces-

sary to provide some means for retaining the same securely in place in the flanges *c* and *d*. In order to simultaneously lock all of the pins *f* to the flanges of the element *a*, I provide a locking ring *i* on the outer edge of which is a series of cut-out portions *j* and a series of shoulder portions *k*, intermediate the cut-out portions *j*. The purpose of these cut-out portions *j* is to permit the ring *i*, after the assemblage of the pins *f*, to be slipped over the pins, as shown in Fig. 1. After the ring *i* is placed in this position, the same is rotated so that the shoulder portions *k* are passed into the slots *g* of the bearing pins *f*, as clearly shown in Figs. 3 and 4. The thickness of the locking-ring *i* is slightly less than the width of the slots *g*.

After the ring *i* has been rotated to the locking position, it is necessary to securely retain the same on the portion *a* in this position in order to prevent the bearing-pins *f* from becoming displaced. For accomplishing this purpose, several screws *m* with a broad head *n* are screwed into the element *a* (see Fig. 4) after the locking ring *i* has been rotated into the position shown in Figs. 3 and 4, the cut-out portions *j* standing in register with the screws *m* (see Fig. 3); then by turning the screws so that the underside of the head portion *n* is brought firmly against the outer surface of the ring *i*, as shown in Fig. 3, the locking ring will be prevented from loosening or turning backwards, thus firmly holding the bearing pins *f* in place.

In order to replace one of the pins *f* or rollers *h*, should the same become badly worn or broken, it is only necessary to remove the screws *m* and turn the locking-ring *i* either forwards or backwards so that the cut-out portions *j* will be in register with the series of pins *f* and the shoulder portions *k* standing midway between the pins, as shown in Fig. 1, thus permitting the pin *f* to be easily removed and a new roller *h* or pin put in place.

What I claim, is:—

1. In a pinion of the class described for engagement with the teeth of a spur-gear, a body portion, the periphery of which is provided with a groove forming parallel flanges, a series of pins carried by the flanges, and means for locking the series of pins simultaneously.
2. In a pinion of the class described for engagement with the teeth of a spur-gear, a body portion, the periphery of which is provided with a groove forming parallel flanges, a series of pins carried by the flanges, anti-friction devices carried by said pins, and means for locking the series of pins simultaneously.
3. In a pinion of the class described for engagement with the teeth of a spur-gear, a body portion, the periphery of which is provided with a groove forming parallel flanges, a series of pins carried by the flanges, anti-friction devices carried by said pins, and means for locking the series of pins simultaneously, said means comprising a ring for engaging the series of pins.
4. In a pinion of the class described, a body portion

provided with a peripheral groove forming flanges, a series of pins carried by the flanges and provided with a groove or slot in their outer ends, and an element for engaging the grooves or slot, locking the pins to the body
5 portion.

5. In a pinion of the class described, a body portion provided with a peripheral groove forming flanges, a series of pins carried by the flanges and provided with a groove or slot in their outer ends, and an element for en-

gaging the groove or slot for locking the pins to the body 10
portion, the locking means comprising a ring-shaped element, and means for securing the ring-shaped element to the body portion for preventing rotation.

ROBERT W. ELLINGHAM.

Witnesses:

K. I. CLEMONS,

H. W. BOWEN.