

No. 654,411.

Patented July 24, 1900.

E. C. F. OTTO & E. C. F. OTTO, JR.

BICYCLE BRAKE.

(Application filed Feb. 24, 1900.)

(No Model.)

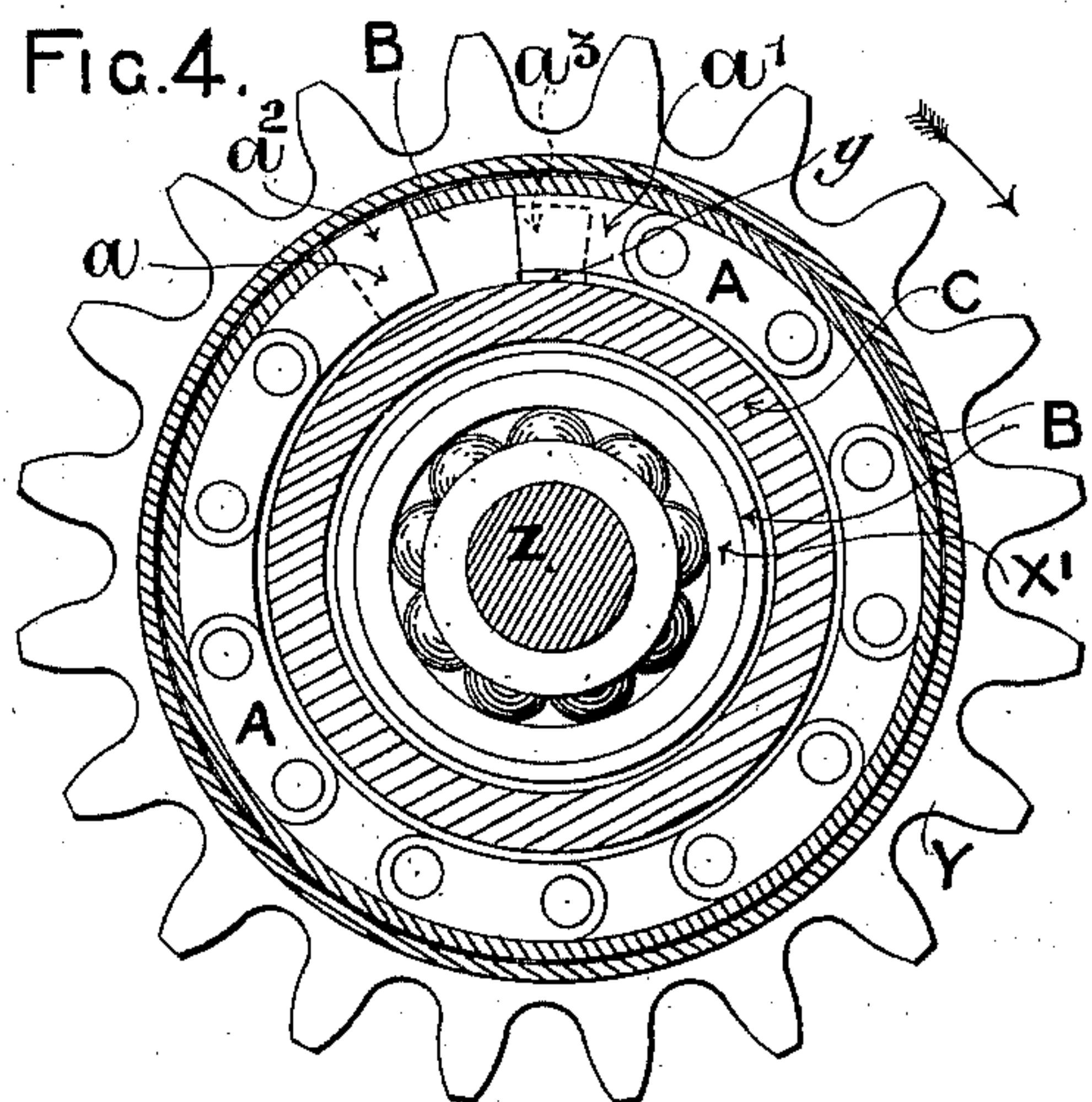
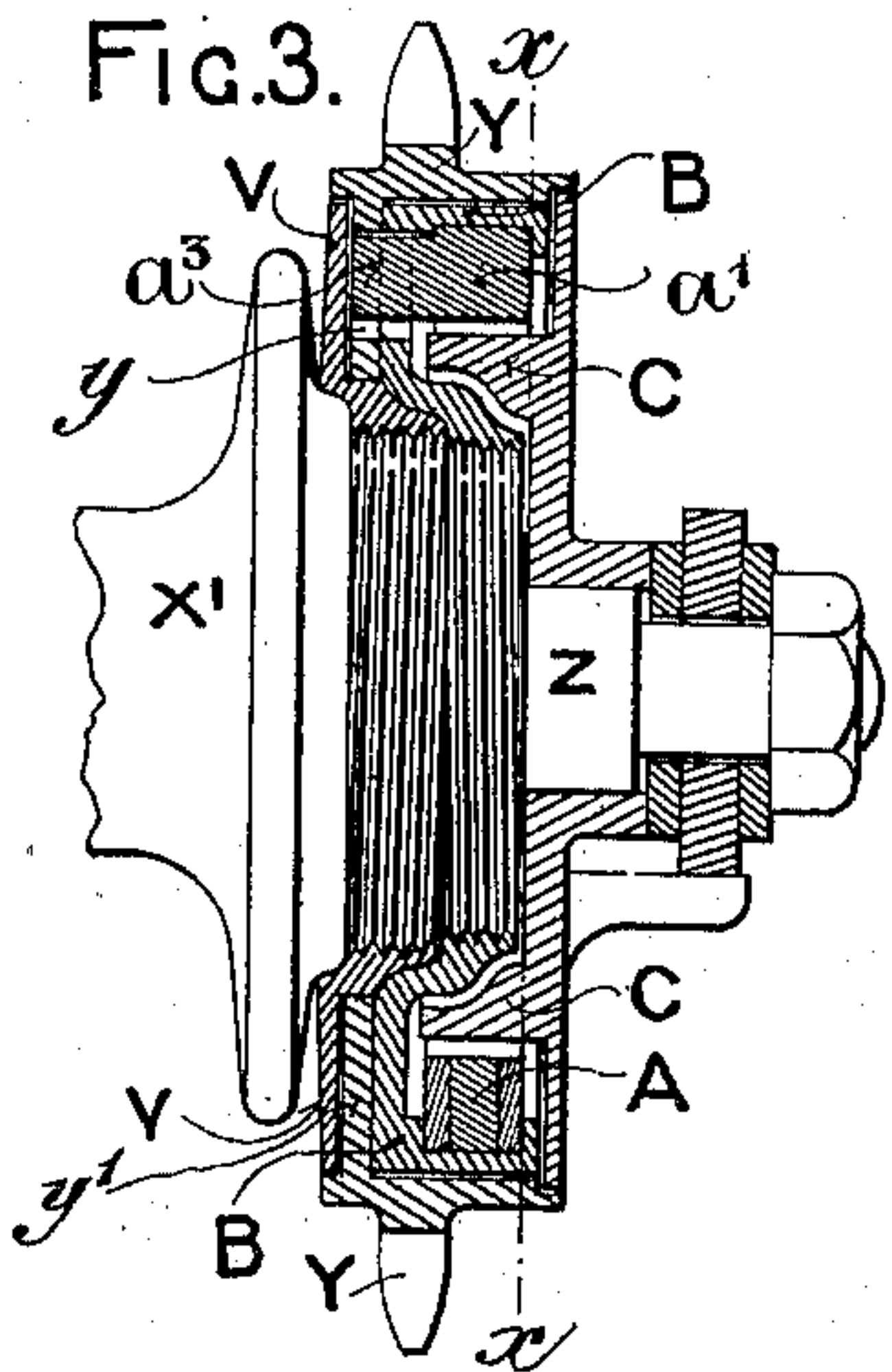
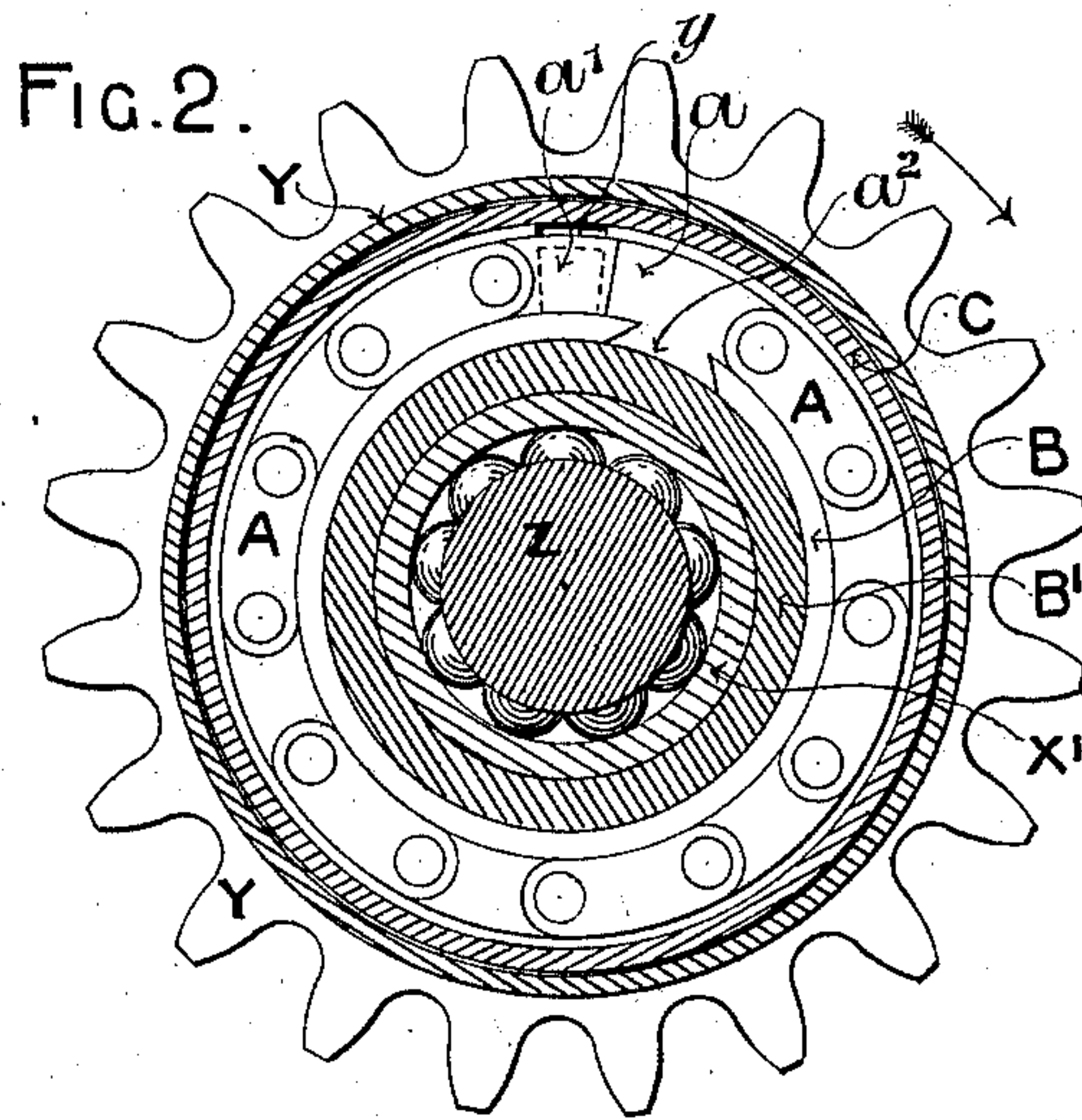
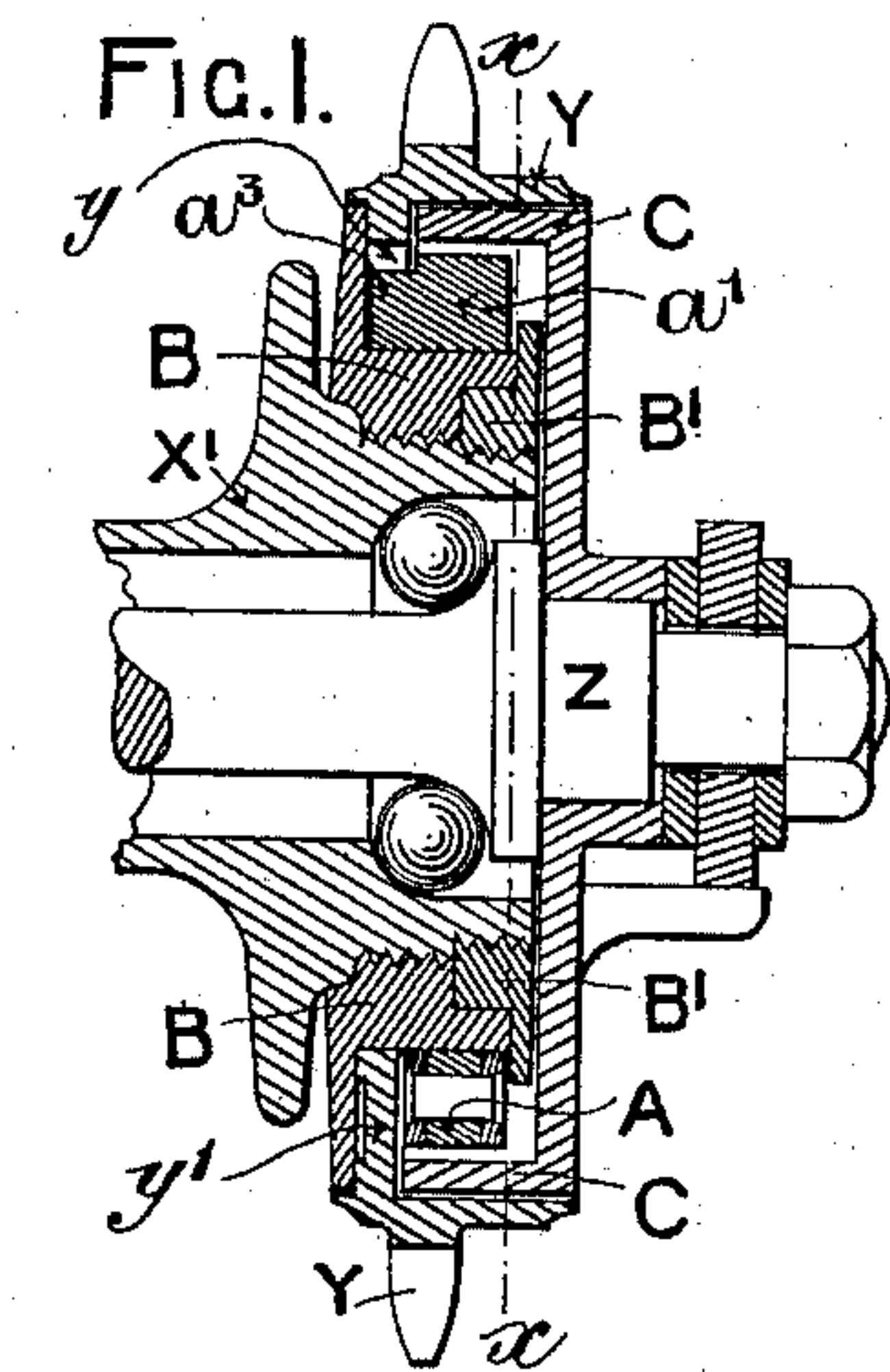


FIG. 5.

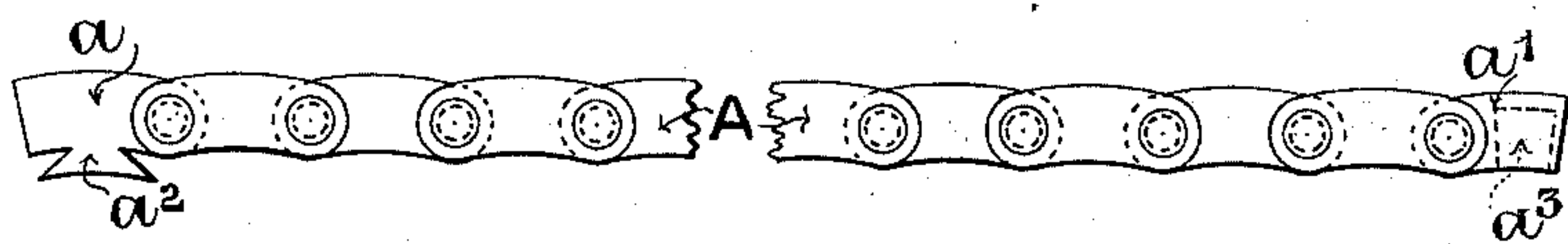
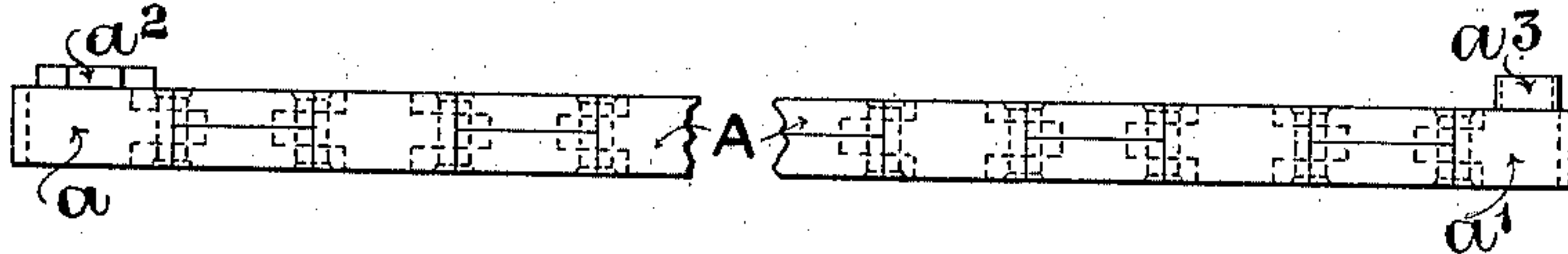


FIG. 6.



WITNESSES:

A. Millward
H. Knight

INVENTORS.

E. C. F. Otto & E. C. F. Otto, Jr.
Per *Robert E. Phillips*
their Attorney.

UNITED STATES PATENT OFFICE.

EDWARD CHARLES FREDERICK OTTO AND EDWARD CHARLES FREDERICK OTTO, JR., OF HONOR OAK, ENGLAND.

BICYCLE-BRAKE.

SPECIFICATION forming part of Letters Patent No. 654,411, dated July 24, 1900.

Application filed February 24, 1900. Serial No. 6,424. (No model.)

To all whom it may concern:

Be it known that we, EDWARD CHARLES FREDERICK OTTO and EDWARD CHARLES FREDERICK OTTO, Jr., subjects of the Queen of Great Britain, residing at Honor Oak, in the county of Surrey, England, have invented a new and useful Improvement in Brakes for Velocipedes, (for which we have obtained Letters Patent in Great Britain, No. 15,503, bearing date the 28th of July, 1899,) of which the following is a full and complete specification.

This invention relates to an improved brake for velocipedes adapted to be put into operation by the action of back-pedaling; and it consists, essentially, of two concentrically-arranged drums—the one a revolving one formed on or fixed to the hub of the driving-wheel and the other a fixed one attached to the frame—and a linked strap or chain band one end of which is attached to the revolving drum and the other end to the sprocket-wheel, which is loosely mounted on the hub of the driving-wheel, the object being to overcome the defects common to brakes of the strap-and-drum type.

In the accompanying drawings, which illustrate this invention, Figure 1 is a broken view in sectional elevation; and Fig. 2 is a view in transverse section on line X X, Fig. 1, showing one form my invention may assume. Figs. 3 and 4 are similar views showing an alternative construction; and Figs. 5 and 6 are broken views, in side elevation and plan, respectively, of the linked strap or chain band.

Similar letters refer to similar parts throughout the several views.

Referring to Figs. 1 and 2, on the hub X' of the driving-wheel is screwed and fixed by a locking-ring B' a flanged drum B, hereinafter called the "supporting-drum," which is adapted to circumferentially support the linked strap or chain band when not in use. Mounted loosely on this drum B is the driving sprocket-wheel Y. On the axle Z of the driving-wheel is a drum C, hereinafter called the "brake-drum," which is mounted concentrically with the supporting-drum B and lies within the rim of the sprocket-wheel Y. This drum C is so connected to the frame of the machine that it cannot revolve. In the annular space between the outer periphery of

the supporting-drum B and the inner periphery of the brake-drum C is the linked strap or chain band A, the one end link a of which is attached to the supporting-drum B by means of a radially-arranged projection a^2 on the said link which engages a transverse groove in the drum, as shown in Fig. 2, and the other end link a' of the said linked strap or chain band A is attached to the sprocket-wheel Y by means of a transverse projection a^3 on the said link which engages a hole or slot y in the web y' of the sprocket-wheel, as shown in Fig. 1. When the pedals of the cycle are driven in a forward direction, the sprocket-wheel Y revolves in the direction of the arrow, Fig. 2, and its motion is imparted to the hub X' of the driving-wheel by reason of the end link a' of the strap or band A bearing against the other end link a of the strap or band A, as shown in Fig. 2; but when back pressure is exerted on the driving-pedals the end link a' of the strap or band being engaged with the sprocket-wheel moves in the opposite direction to the other end link a of the strap or band which engages the hub of the wheel through the drum B, which causes the linked strap or chain band A to engage the brake-drum C, which it does, owing to the linked formation of the strap or drum, gradually a link at a time.

In the modification shown by Figs. 3 and 4 the supporting-drum B is placed exterior to the brake-drum C and is fixed to the hub X' of the driving-wheel by means of a flanged locking-ring V. In this construction the end link a of the strap or band A is attached to the supporting-drum B by means of a radially-arranged projection a^2 on the said link, which engages a transverse groove in the drum, as shown in Fig. 4, and the other end link a' of the strap or band is attached to the sprocket-wheel Y by means of a transverse projection a^3 on the said link, which engages a hole or slot y in the web y' of the sprocket-wheel, as shown in Fig. 3. When the bicycle is being driven in a forward direction, the motion of the sprocket-wheel Y is imparted to the hub of the driving-wheel by reason of the engagement of the linked strap or band A with the supporting-drum B, and when back pressure is exerted on the driving-pedals the

linked strap or drum A is caused to engage the brake-drum C by reason of the link *a* moving toward the end link *a'*.

The linked strap or band A consists of a series of links of metal or other suitable material connected together by transverse pins or rivets, as shown by Figs. 5 and 6, or so shaped that they engage one another by hooking. When the linked strap or band is intended to act by coming into contact with an internal drum—i. e., when it would be in a state of compression—the ends of the links are preferably so shaped that they abut one against the other, as shown, so as to relieve the pins or rivets connecting them of all strain. Each link of the strap or band is made of the same width, and its operative engaging surface, whether it be the outer or inner one, is made of the same curvature as the surface of the drum with which it is intended to engage, so as to obtain the greatest possible amount of frictional surface. If increased frictional resistance is required, it may be obtained either by lining the brake-drum with leather or other suitable material or in any other approved manner.

It will be seen that owing to the link formation of the strap or band it has no tendency to become set or to lose its shape, and being supported it cannot come into accidental contact with the brake-drum when the brake is "off." Neither does it, as in this type of brake having spring or elastic straps, absorb a large amount of power to overcome its elasticity when applying it, and, further, it is impossible for the brake to seize when too suddenly applied, owing to the links coming successively into action.

What we claim, and desire to secure by Letters Patent, is—

1. In a brake for velocipedes, the combination, with a supporting-drum rigidly connected with the road-wheel, and a non-revoluble brake-drum arranged concentric with the supporting-drum; of a driving-wheel, and a chain-brake arranged in the space between the said drums and having its ends connected to the said driving-wheel and supporting-drum respectively, said chain being composed of pivoted links which are curved upon the side next to the brake-drum so as to form a

continuous brake-surface of the same curvature as that of the brake-drum, substantially as set forth.

2. In a brake for velocipedes the combination with the hub of the driving-wheel, of a drum mounted concentrically thereon and adapted to support the operating strap or band when the brake is out of action, of a sprocket-wheel mounted loosely on the said drum, of a second drum mounted on the axle of the driving-wheel concentrically with the first drum and so attached to the frame of the machine that it cannot rotate, and of a strap or band formed of a series of links pivoted together so that their ends abut against one another each link having its operative face curved to the same radius as the operative face of the drum with which the strap or band engages when the brake is in action, the one end link of the said strap or band being connected to the drum fixed to the hub of the driving-wheel and the other end link to the sprocket-wheel, as and for the purpose set forth.

3. In a brake for velocipedes the combination with the hub of the driving-wheel, of a drum mounted concentrically thereon and adapted to support the operating strap or band when the brake is out of action, of a sprocket-wheel mounted loosely on the said drum, of a second drum mounted on the axle of the driving-wheel concentrically with the first drum and so attached to the frame of the machine that it cannot rotate, and of a strap or band formed of a series of links pivoted together so that their ends abut against one another each link being of the same width and having its operative face curved to the same radius as the operative face of the drum with which the strap or band engages when the brake is in action, the one end link of the said strap or band being connected to the drum fixed to the hub of the driving-wheel and the other end link to the sprocket-wheel, as and for the purpose set forth.

EDWARD CHARLES FREDERICK OTTO.
EDWARD CHARLES FREDERICK OTTO, JR.

Witnesses:

A. KNIGHT CROAD,
W. M. HARRIS.