

No. 665,971.

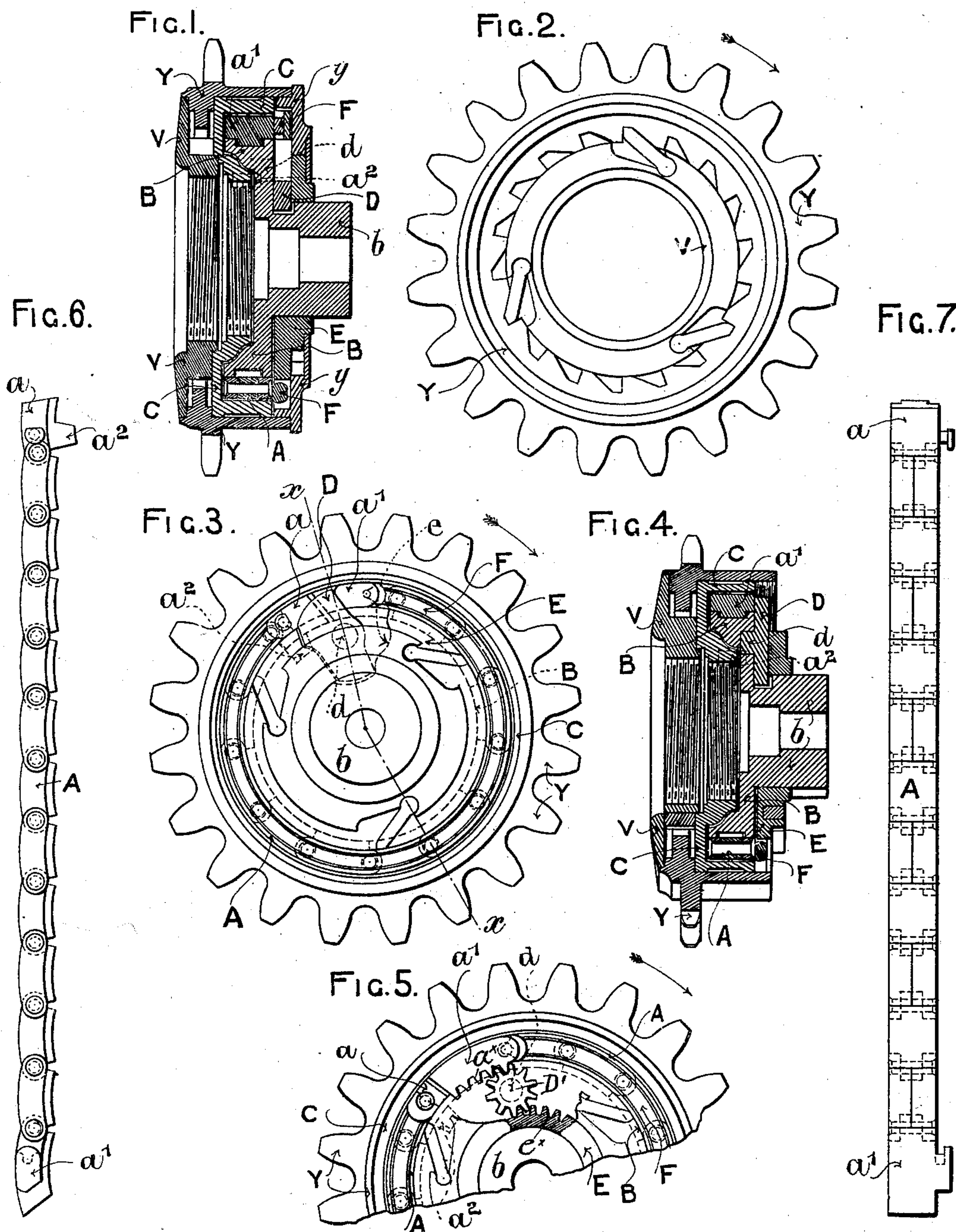
Patented Jan. 15, 1901.

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BRAKE.

(Application filed Apr. 25, 1900.)

(No Model.)



WITNESSES:

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BRAKE.

SPECIFICATION forming part of Letters Patent No. 665,971, dated January 15, 1901.

Application filed April 25, 1900. Serial No. 14,302. (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 which we have obtained Letters Patent in Great Britain, No. 12,959, bearing date the 25th of September, 1899,) of which the following is a full and complete specification.

This invention relates to improvements in brakes for velocipedes brought into action by back-pedaling, acting in combination with a driving-clutch to produce what is known as a "free wheel;" and it consists, essentially, of a linked strap or band in the form of a chain adapted to be either contracted onto or expanded within a brake-drum fixed to the wheel or axle to which the retarding or braking effect is to be imparted, of a rocking or reversing lever or its equivalent mounted on a fixed supporting-drum and adapted to engage the free end of the chain band, and of a clutch-controlled disk adapted to contract or expand the chain through the medium of the rocking or reversing lever, the object being to cause the braking effect to be produced by inducement, whereby the maximum retarding effect is produced with a minimum amount of effort or exertion on the part of the rider.

In the accompanying drawings, which illustrate, by way of example, a brake constructed according to this invention, in which the brake-chain band is expanded into contact with an internal drum to produce the braking effect, Figure 1 is a view in sectional elevation. Fig. 2 is a view in side elevation showing the driving-clutch. Fig. 3 is a view in side elevation showing the brake clutch and mechanism. Fig. 4 is a view in section on line $x x$, Fig. 3; and Fig. 5 is a broken view, in side elevation, showing a modification. Figs. 6 and 7 are views in side elevation and plan, respectively, of the linked strap or chain band.

For distinctness the hub and axle of the driving-wheel are not shown in any of the figures.

Similar letters refer to similar parts throughout the several views.

The sprocket-wheel Y is loosely mounted on a flanged sleeve V, adapted to be screwed or otherwise fixed to the hub of the driving-wheel, motion being imparted from the sprocket-wheel Y to the sleeve V by means of a ratchet and pawl or other suitable type of clutch, as shown by Fig. 2. Exterior to the sleeve V is screwed or otherwise fixed to the hub an internal drum C, and within this drum is another drum B, which is mounted on the axle carrying the driving-wheel in such a manner as not to rotate. On this drum B is loosely mounted a disk E, and screwed or otherwise fixed to a flanged prolongation of the sprocket-wheel Y is a disk y , which is connected with the disk E by means of a ratchet and pawl or other suitable form of clutch, as shown by Fig. 3. The end link a of the chain band A is attached to the periphery of the supporting-drum B by means of a radially-arranged projection a^2 , engaging a hole or slot in the drum C, and the other end link a' is connected indirectly to the disk E in such a manner that the motion of the said disk is imparted to the end link a' of the chain band A in the reverse direction—that is to say, so that the end link a' of the chain band A is caused to move in the same direction as the brake-drum C. Any convenient device may be employed for reversing the motion of the disk E, those illustrated by Figs. 5 and 7 being convenient ones. In the former the device takes the form of a lever D, pivoted on a pin d , carried by the drum B. In the latter it takes the form of a pinion D', mounted on the drum B and engaging with racks e^* and a^* , formed on or fixed to the drum E and the end link a' of the chain band A, respectively.

The disk E, as before stated, is connected to the sprocket-wheel Y by means of a clutch, the arrangement being such that when the sprocket-wheel Y is moved in the reverse direction to that indicated by the arrow, which is the driving direction, motion is imparted to the disk E, which in turn rocks the lever D on its pivot, whereby the end link a' of the chain band A is caused to move away from the end a thereof in the direction of rotation of the brake-drum C, thereby expanding the said chain band and causing it to engage the interior surface of the said brake-drum C.

To return the chain band A into contact with the supporting-drum B when the brake is "off," a spring, such as F, acting between the end links α and α' to keep them together, may be employed, or the rocking lever D may positively engage the link α' and be controlled by a suitable spring.

The chain band A consists of a series of links connected together either by transverse pins or rivets or so shaped that they may hook or otherwise engage one with the other, the arrangement being such that their ends abut one against the other, so as to relieve the transverse pins or rivets of all strain, the curvature of the engaging surfaces of each of the links of the chain band being of the same radius as the face of the brake-drum with which it engages when the brake is in operation. By this construction it will be seen that the slightest movement of the sprocket-wheel in a backward direction brought about by back-pedaling brings the first link of the chain band into frictional contact with the interior surface of the brake-drum C, while the continued rotation of the said drum automatically drags the remaining links of the chain band one by one into frictional engagement with it, the action of back-pedaling being merely to set the brake in operation. Consequently this brake requires very little muscular effort on the part of the rider to apply and maintain it in operation.

It will be understood that the disk E, operating the beforementioned rocking or reversing lever D, is connected directly or indirectly with the sprocket-wheel Y by means of a clutch, so that movement is only imparted to it by back-pedaling.

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

1. In a brake for velocipedes the combination with the driving-wheel, of a sprocket-wheel Y mounted loosely on the hub thereof, of a flanged sleeve V fixed to the hub of the driving-wheel and connected with the sprocket-wheel Y by a clutch, of a brake-drum C fixed to the hub of the driving-wheel, of a supporting-drum B mounted concentrically with the brake-drum in such a manner that it cannot rotate, of a disk E mounted loosely on the supporting-drum, of a disk γ carried by the sprocket-wheel and connected to the disk E by means of a clutch, of a chain band A formed of a series of links pivoted together the one end link α of the said chain being connected to the supporting-drum B, and of a device acting between the disk E and the end link α' of the chain band A whereby the rearward motion of the said disk imparts a forward movement to the end link α' of the chain band A, as and for the purpose set forth.

2. In a brake for velocipedes the combination with the driving-wheel, of a sprocket-

wheel Y, of a flanged sleeve V fixed to the hub of the driving-wheel and connected with the sprocket-wheel Y by a clutch, of a brake-drum C fixed to the hub of the driving-wheel, of a supporting-drum B mounted concentrically with the brake-drum in such a manner that it cannot rotate, of a disk E mounted loosely on the supporting-drum, of a disk γ carried by the sprocket-wheel and connected to the disk E by means of a clutch, of a chain band A 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 chain band engages when the brake is in action, the one end link α of the said chain band being connected to the supporting-drum B, and of a device acting between the disk E and the end link α' of the chain band A whereby the rearward motion of the said disk imparts a forward movement to the end link α' of the chain band A, as and for the purpose set forth.

3. In a brake for velocipedes the combination of a sprocket-wheel Y, of a flanged sleeve V fixed to the part to be driven and connected with the sprocket-wheel Y by a clutch, of a brake-drum C fixed to the part to which the braking action is to be applied, of a supporting-drum B mounted concentrically with the brake-drum in such a manner that it cannot rotate, of a disk E mounted loosely on the supporting-drum of a disk γ carried by the sprocket-wheel and connected to the disk E by means of a clutch, of a chain band A 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 it engages when the brake is in action, the one end link α of the said chain band being connected to the supporting-drum B, of a device acting between the disk E and the end link α' of the chain band A whereby the rearward motion of the said disk imparts a forward movement to the end link α' of the chain band A, and of a spring F engaging the end links of the chain band A so as to bring them together to cause the said band to lie in contact with the supporting-drum B when the brake is out of action, as and for the purpose set forth.

EDWARD CHARLES FREDERICK OTTO.

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