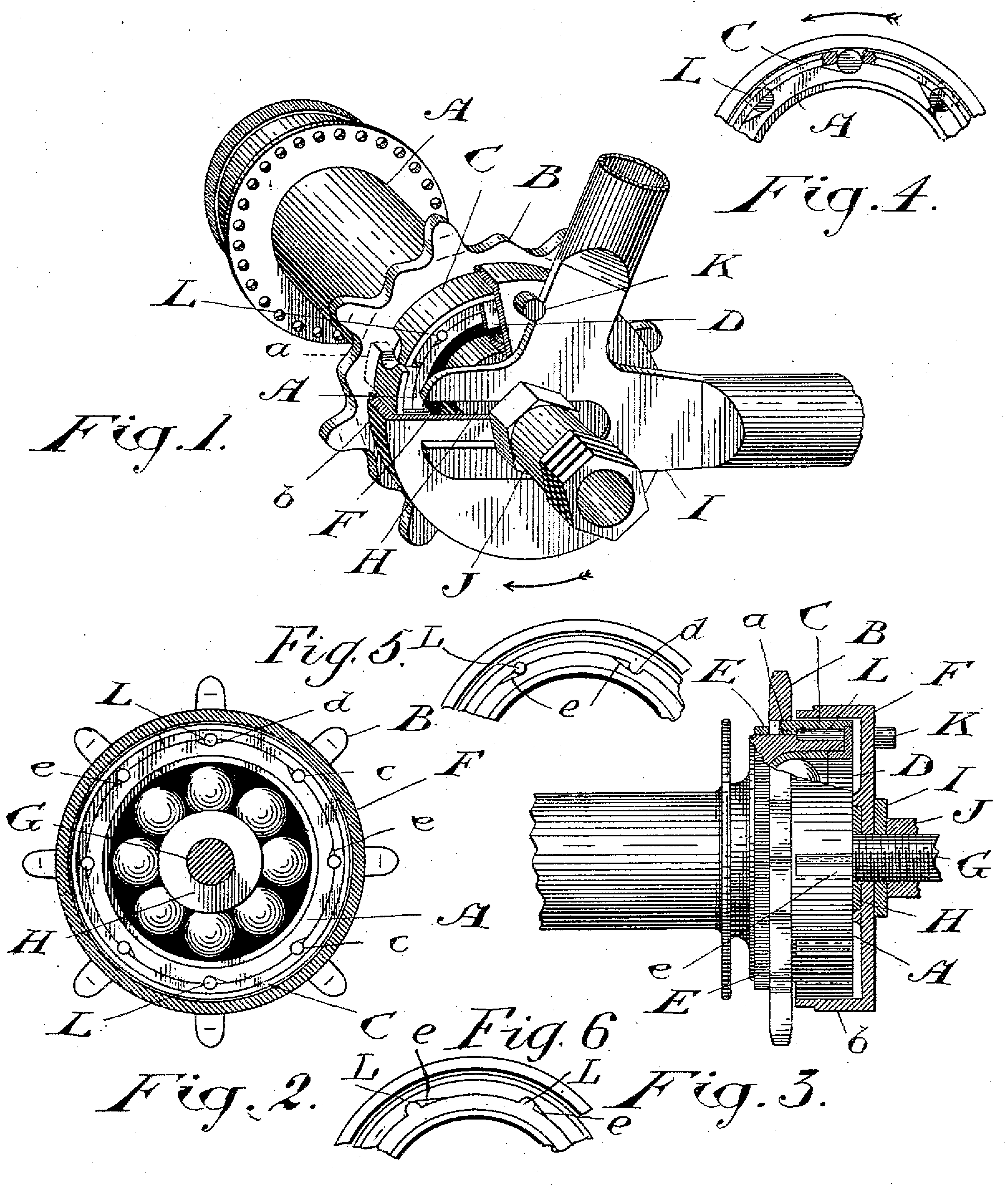
(No Model.)

W. S. WILSON.
BACK PEDALING BRAKE.

No. 597,347. Patented Jan. 11, 1898.



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UNITED STATES PATENT OFFICE.

WILLIAM S. WILSON, OF BRANTFORD, CANADA, ASSIGNOR TO THE GOOLD BICYCLE COMPANY, LIMITED, OF SAME PLACE.

BACK-PEDALING BRAKE.

SPECIFICATION forming part of Letters Patent No. 597,347, dated January 11, 1898.

Application filed March 15, 1897. Serial No. 627,714 (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SANFIELD WILSON, manufacturer, of the city of Brantford, in the county of Brant and Province of Ontario, Canada, have invented a certain new and Improved Brake for Bicycles and Similar Vehicles, of which the following is a specification.

The object of my invention is to devise a light, compact, simple, and efficient brake which can be put into action by the pressure of back-pedaling; and it consists, essentially, of a stationary friction-drum carried by the axle of the rear wheel and a band adapted to move a set of rollers or their equivalents up inclined planes when back pressure is applied to the driving-sprocket, so as to produce friction against the inside of the said drum, the whole being constructed in detail substantially as hereinafter more specifically described and then definitely claimed.

Figure 1 is a perspective view showing my improved brake partially broken away to show the interior construction. Fig. 2 is a sectional front elevation of the same. Fig. 3 is a side elevation of the same, partially in section. Figs. 4, 5, and 6 are side elevations of a portion of an alternative form of my invention.

In the drawings like letters of reference indicate corresponding parts in the different figures.

A is the hub of the rear wheel, on which is loosely sleeved the sprocket-wheel B. Surrounding the hub, outside the sprocket-wheel, is a divided friction-band C, which has a lug *a* formed thereon, which fits into a correspondingly-shaped recess in the sprocket-wheel B.

D is a flanged washer screwed within the end of the hub A and bearing against the split friction-band C, so as to retain it in position.

The sprocket-wheel B is held in place on the inner side by means of a ring E, formed on or connected to the hub.

F is a friction-drum sleeved upon the axle G, its rim *b* inclosing the divided friction-band C and extending inwardly close to the sprocket-wheel B. As will be seen from the drawings, the friction-band and friction-drum are barely in contact under normal conditions. The end of the friction-drum is in contact with the cone H, so that the frame I may be clamped securely between the drum F and the nut J.

K is the pin, formed on or connected to the drum F. This pin normally lies against a portion of the frame I, as shown, to prevent the drum being rotated in the direction in which the hub may be moving.

L are a series of small rollers set half in recesses *c*, formed in the friction-band C, and partly in recesses *d*, formed in the hub A. Each recess *d* in the hub is formed with an inclined plane *e*, extending from its bottom to the surface of the hub in a direction reverse to that of the movement of the hub. From this construction it follows that the friction-band and the hub will revolve as one when power is applied to the sprocket-wheel to drive it in the direction indicated by arrow. If, however, the strain is reversed, as in the action of back-pedaling, the rollers L will ride up the inclined planes *e* and force the friction-band C into close contact with the inside surface of the rim *b* of the drum F, thus applying a very efficient brake to prevent the continued rotation of the hub *a*, and consequently of the wheel of which it forms a part. The force with which the split friction-band C is pressed against the rim of the friction-drum depends partly on the strength with which the rider of the wheel back-pedals and partly on the angle of the inclined plane *e*, which angle may be varied to suit different conditions.

It is evident that the rollers L may be made integral with the friction-band, as shown in Fig. 5, or that the inclined planes *e* might be formed on the friction-band, if so desired, as shown in Fig. 6; but all such variations would fall within the scope of my invention.

The band C in my brake performs two functions—first, that of moving the rollers L up the inclined planes *e*, and, second, that of taking the wear caused by friction against the drum. The first function is the most important, and it will be as effectively performed if the band be divided between each pair of rollers (see Fig. 2) as if divided at one point only, as in Fig. 1. The second function not being as important as the first, the band C may be so con-

structed as to permit the rollers L themselves to come into contact with the inside surface of the drum. This form is shown in Fig. 4, where slots are cut through the band through which the rollers may play. It is evident that motion of the band in the direction indicated by arrow will cause the balls or rollers to press upon the drum, whereas motion of the band in the other direction will lock the band and the hub together, so that they will revolve as one.

From the above description it will be seen that my brake is exceedingly simple, light, and strong, and also that it applies no strain whatever upon the bearings, the only effect of its application being to put a twisting strain upon the hub and the wheel. As it is applied simply by the action of back-pedaling, no unsightly or cumbersome gear is required for its operation, and any degree of friction may be obtained between the friction-band and the drum, so as to either merely retard the motion of the wheel or stop its rotation entirely.

What I claim as my invention is—

1. In a brake for bicycles, and in combination with the wheel and hub thereof, a stationary friction-drum carried by the axle of said wheel, a sprocket-wheel loose on said hub, a band having a connection with said sprocket-wheel, one of said parts having a groove therein with one of its sides forming an inclined plane with an abrupt shoulder at one end, and a wedging device carried by another of said parts and working in said groove and arranged when in the groove to form a positive driving medium and when on the inclined plane to create friction on said stationary drum, substantially as described.

2. In a brake for bicycles, and in combination with the wheel and hub thereof, a stationary friction-drum carried by the axle of said wheel, a sprocket-wheel loose on said hub, a friction-band having a connection with said sprocket-wheel, a groove in said hub having one of its sides forming an inclined plane with an abrupt shoulder at its end, a wedging device carried by said friction-band and interposed between said friction-band and hub and working in said groove and arranged when in the groove to form a positive driving medium and when on the inclined plane to create friction between said friction-band and stationary drum, substantially as described.

3. In a brake for bicycles and in combination with the wheel and hub thereof, a stationary friction-drum carried by the axle of said wheel, a sprocket-wheel loose on said hub, a friction-band having a connection with said sprocket-wheel, recesses in said hub and friction-band, one set of said recesses having their sides forming inclined planes, and rollers placed in the recesses between said friction-band and hub and acting as a positive driving medium when at one end of the grooves and when on the inclined planes acting to force the friction-band against the friction-drum, substantially as described.

4. In a bicycle, an axle and a stationary drum carried by the said axle, in combination with a hub and a divided friction-band supported by the hub; a flanged washer screwed within the hub and adapted to retain the said band upon the hub; a sprocket-wheel loose on the hub and connected with the said friction-band; and one or more rollers lying partly in recesses in the said friction-band and partly in recesses in the hub, an inclined plane being formed leading from the bottom of each recess in the hub to its surface, substantially as and for the purpose specified.

Brantford, February 19, 1897.

WILLIAM S. WILSON.

In presence of—
ANDREW L. BAIRD,
S. G. MACKLIN.