

No. 665,836.

Patented Jan. 8, 1901.

H. W. PATRICK.

BICYCLE BRAKE.

(Application filed Oct. 24, 1899.)

(No Model.)

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Fig.1.

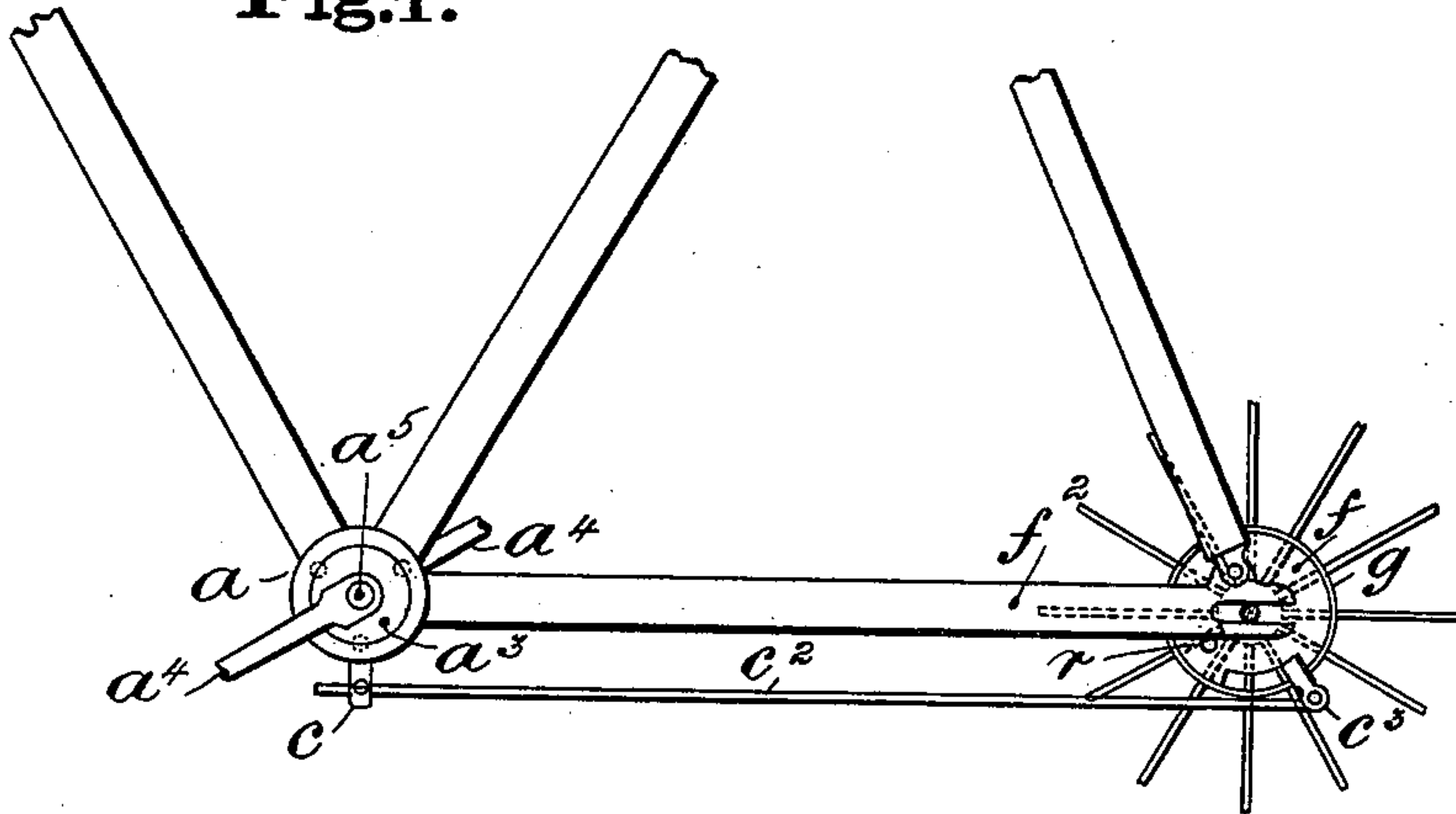
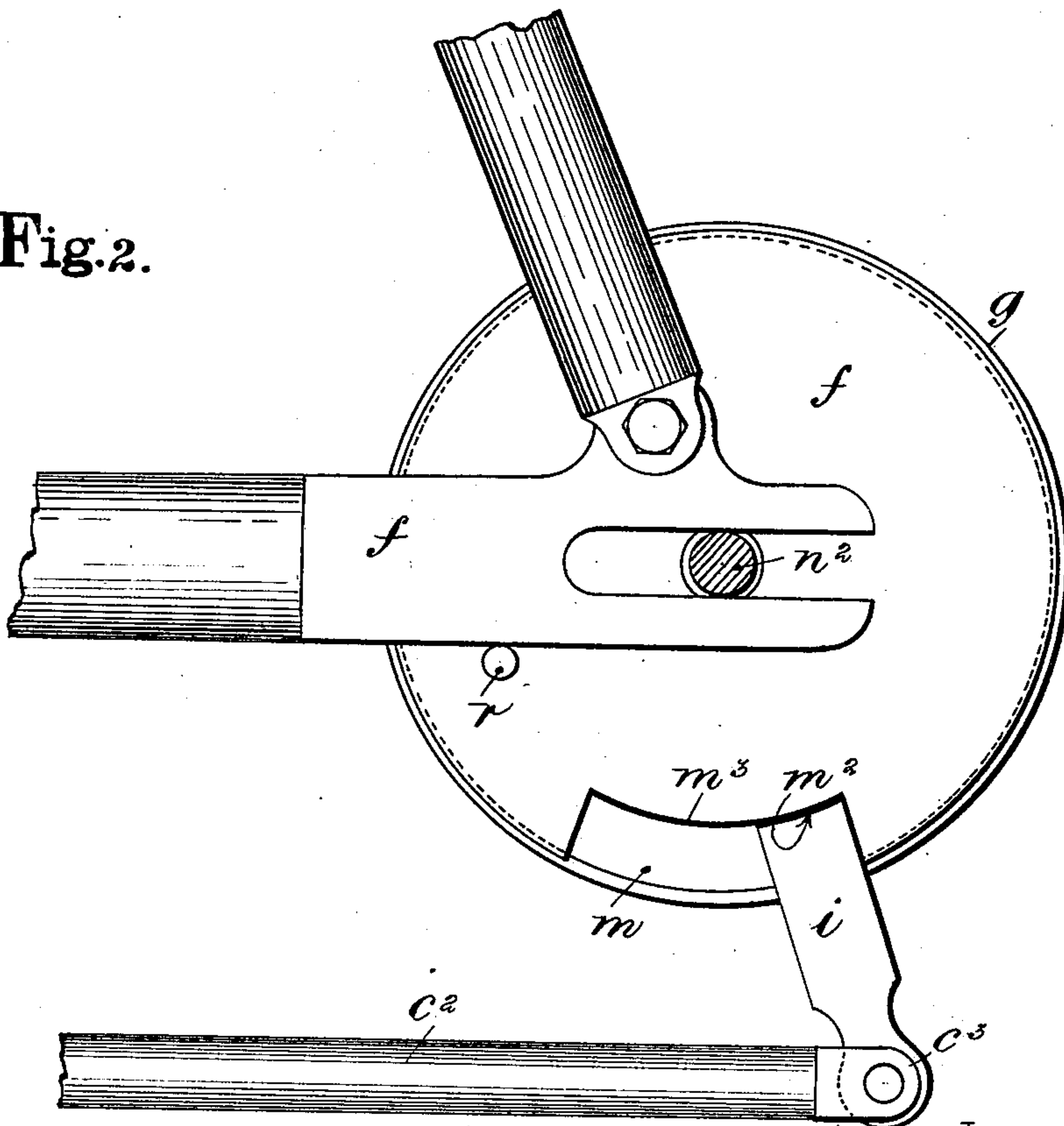


Fig.2.



Witnesses

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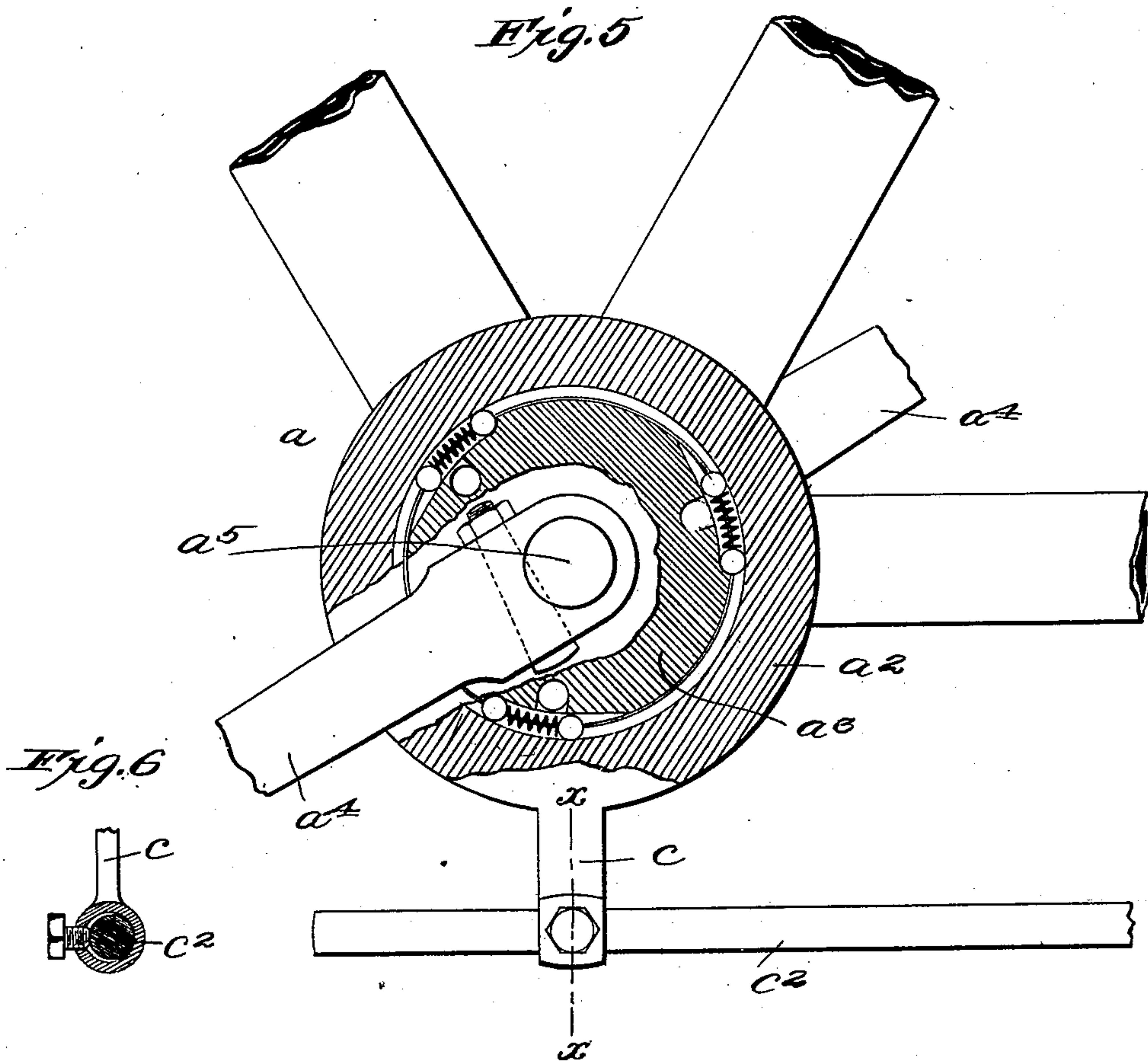
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Witnesses

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UNITED STATES PATENT OFFICE.

HENRY WILLIAM PATRICK, OF BIRMINGHAM, ENGLAND.

BICYCLE-BRAKE.

SPECIFICATION forming part of Letters Patent No. 665,836, dated January 8, 1901.

Application filed October 24, 1899. Serial No. 734,656. (No model.)

To all whom it may concern:

Be it known that I, HENRY WILLIAM PATRICK, general manager, a subject of the Queen of Great Britain, residing at Snow Hill, Birmingham, in the county of Warwick, England, (full postal address,) have invented certain new and useful Improvements in Brake Mechanism for Cycles, of which the following is a specification.

This invention is an improved brake mechanism for cycles fitted to work upon the hub or center of the driving-wheel (preferably the rear wheel) upon the side opposite the chain-wheel and upon the bottom bracket or crank-axis. It is put into action by a slight retrograde or back-pedaling movement of a rider and is particularly applicable to a free-wheel-built cycle or a cycle in which the pedals can rest or remain stationary while the cycle is running.

The brake mechanism according to this invention is illustrated in the accompanying drawings and will be hereinafter clearly defined in connection therewith and by the aid of reference-letters.

The brake mechanism comprises two parts, the one a retarding means and the other devices for operating them, both parts being shown in diagram in Figure 1 of the drawings applied to the rear wheel and crank-axis, respectively, of a well-known-pattern cycle. Figs. 2, 3, and 4 are views of the retarding means of Fig. 1 on a larger scale, the first-named figure being a side elevation of the exterior, the second-named figure a side elevation from the inside of the hub, and the last-named figure a transverse section of Fig. 3 on the dotted line xx . Fig. 5 is a sectional view of the clutch, and Fig. 6 is a detail sectional view on the line XX , Fig. 5.

The brake mechanism illustrated by the aforesaid figures comprises the following parts: Upon the hub d^2 of the rear wheel, on the opposite side to the chain-wheel d^3 , is provided a rigid circular drum or cylindrical collar d of about three inches in diameter, preferably an attached part in view of simplicity of construction and choice of material, although the said drum must rotate as one with the hub. Surrounding the periphery of this drum or collar is an open brake-band h , normally free of or out of contact with the said

drum, but capable of being closed in upon and around it by drawing together its free ends $h^2 h^3$. The brake-band is a resilient one and is lined with leather or similar material h^6 , and the periphery of the drum d is a plain one. The free ends of the band h are connected to two studs or outstanding pegs $h^4 h^5$, respectively, carried upon a rotatable ring g and a fixed disk or carrier plate f , the said carrier-plate being threaded upon the end n^2 of the axle and constituting a mounting for the said rotatable ring. The said ring encircles the carrier-plate f and works within a groove or seating g^2 upon it, and the stud or peg h^4 it carries is connected to it by an arm or coupling piece i , which is operated to move the ring g by a connecting-rod c^2 , connected to the said arm at c^3 . The disk or carrier-plate f fits on the axle end n^2 , external to the drum d and the band h , but comes quite close to them and is connected with the framing f^2 of the cycle, so that it becomes a rigid part therewith. In the drawings the said plate or disk is clamped upon the axle end, and a stud r , Figs. 1 and 2, prevents its rotation on the said axle end in the direction for closing in the band h upon the drum d . The stud h^5 is a fixture on the disk or carrier-plate, and the end h^2 of the band h is held stationary by it while the end h^3 is moved to close in the said band by the part rotation of the ring g within the seating g^2 . A slot or cut-away part m in the carrier-plate allows freedom of movement of the arm i to rotate the ring g , the inner edge m^2 of the said arm during the movement working upon a circular surface m^3 , adjacent to the cut-away part, to steady the traverse of the arm and prevent any strain upon the ring g . The connecting-rod c^2 , as aforesaid, is adjustably attached to a projecting part c upon a clutch a , mounted to work upon the crank-axis a^5 . The middle part a^3 of the clutch is a fixture upon the cranks a^4 or their axis and can move freely and independently of the outer part a^2 of the said clutch in a forward-pedaling direction but only as rigid with the said outer part in a back-pedaling direction of the cranks, the said outer part being normally held stationary by being connected with the band h . Clutches of the type described are well known; but a ball-clutch of a well-known con-

struction (usually used on a free-wheel cycle) is the one best suited for the purpose of this invention.

The working of the brake mechanism is as follows: Forward pedaling or driving of the cycle moves only the part a^3 of the clutch; but back pedaling moves the part a^2 also and reciprocates the rod c^2 and moves the arm i and closes in the band h onto the drum d . Immediately forward pedaling is again set up the band h automatically opens out and leaves the surface of the drum d and brings the parts i , c^2 , and a^2 back to their normal positions, as set forth in the figures of the drawings.

A brake constructed according to the foregoing is a powerful one, capable of being instantly put into action to either gradually retard the cycle or decisively to bring the cycle to a dead stop, the resilient band h , however, being of such strength that there must be a back-pedaling action in order to supply the brake at all.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

In a brake mechanism for cycles, a drum d , fixed on the wheel-hub, a peripherally-grooved carrier-plate f , fixed to the cycle-frame, a resilient brake-band h , surrounding the drum and secured at one end to the carrier-plate, a rotatable ring g , freely mounted within the groove in said plate, an arm i , projecting through a slot m , in the carrier-plate and to which said ring and one end of the resilient band are connected, and means for moving said arm to cause the resilient band to act upon the drum, substantially as and for the purpose described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

HENRY WILLIAM PATRICK.

Witnesses:

GEO. LEARY,
A. F. BIDDLE.