

(No Model.)

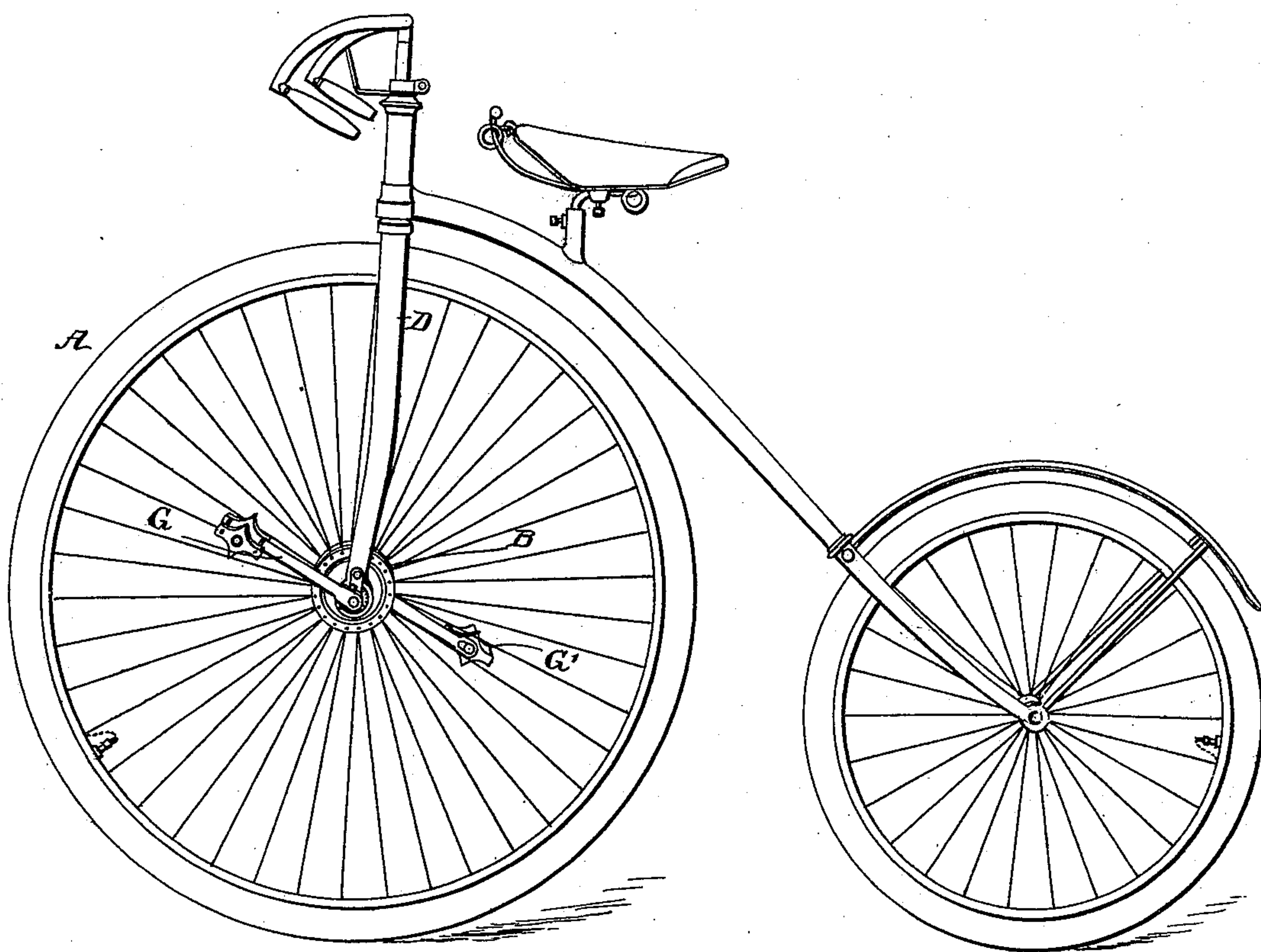
2 Sheets—Sheet 1

G. GLYDON.  
SPEED GEARING FOR CYCLES.

No. 510,252.

Patented Dec. 5, 1893.

Fig 1



WITNESSES:

*H. Walker*  
*C. Sedgwick*

INVENTOR

*G. Glydon*  
BY *Munn & Co*  
ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

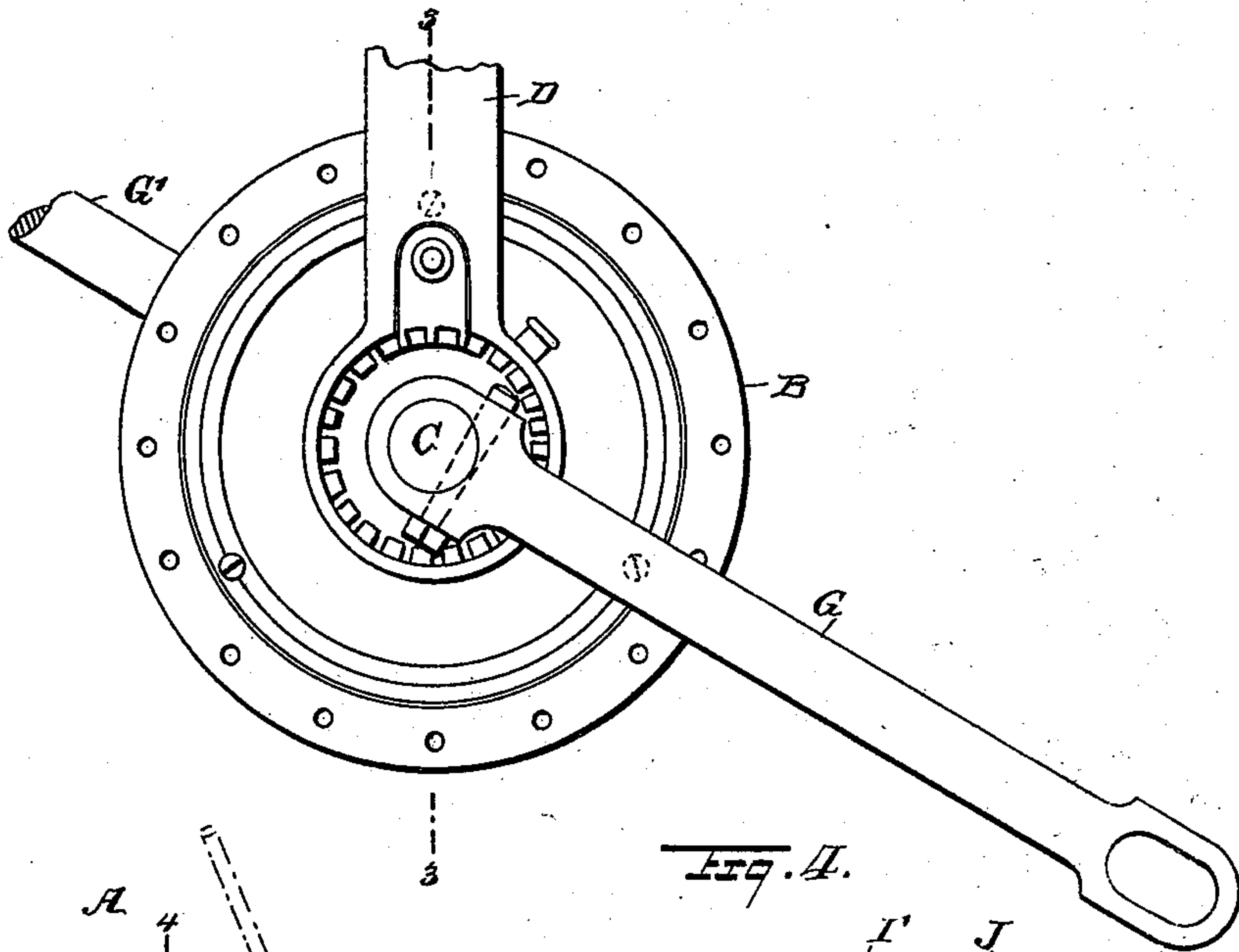


Fig. 3.

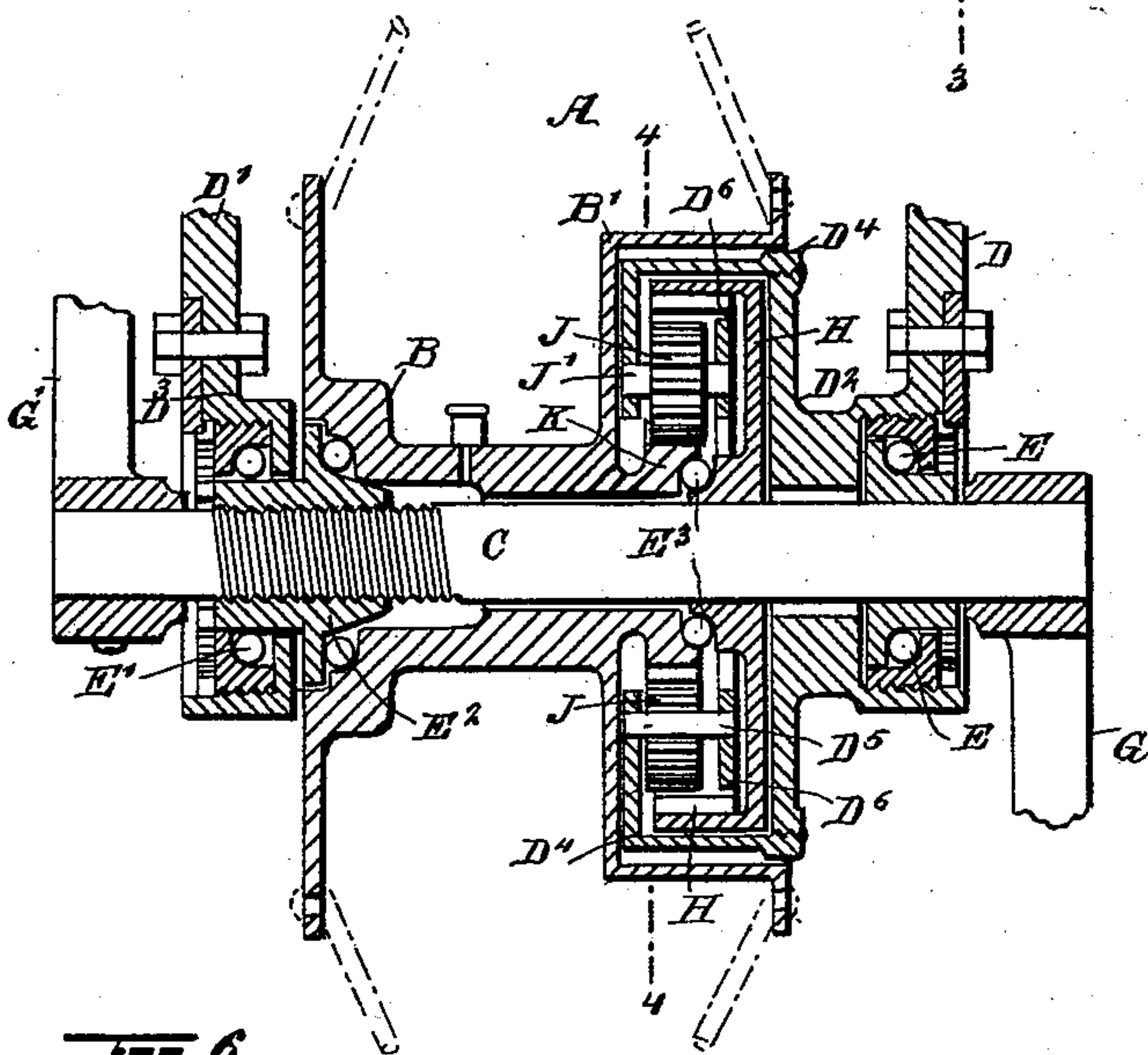


Fig. 4.

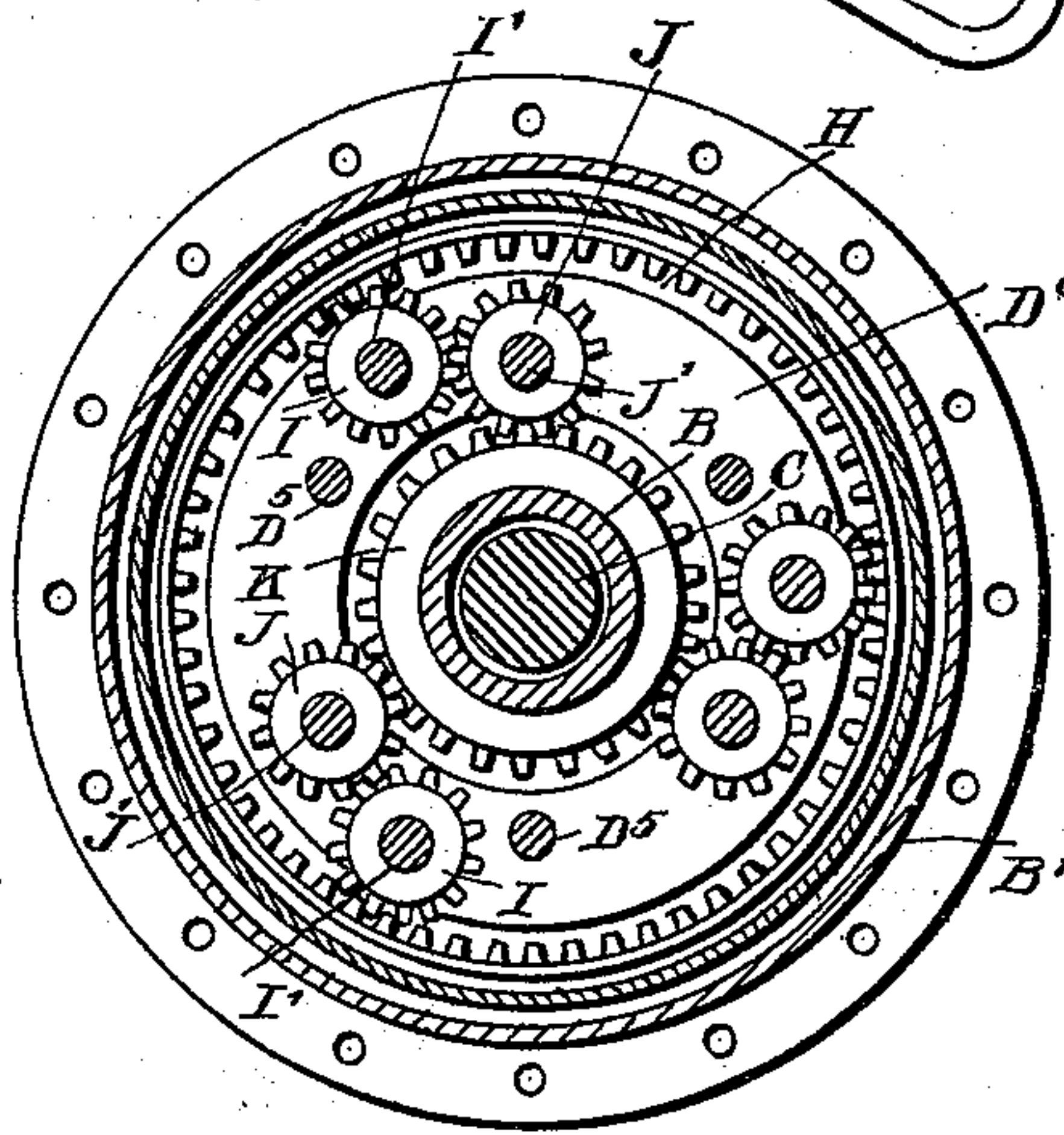


Fig. 6.

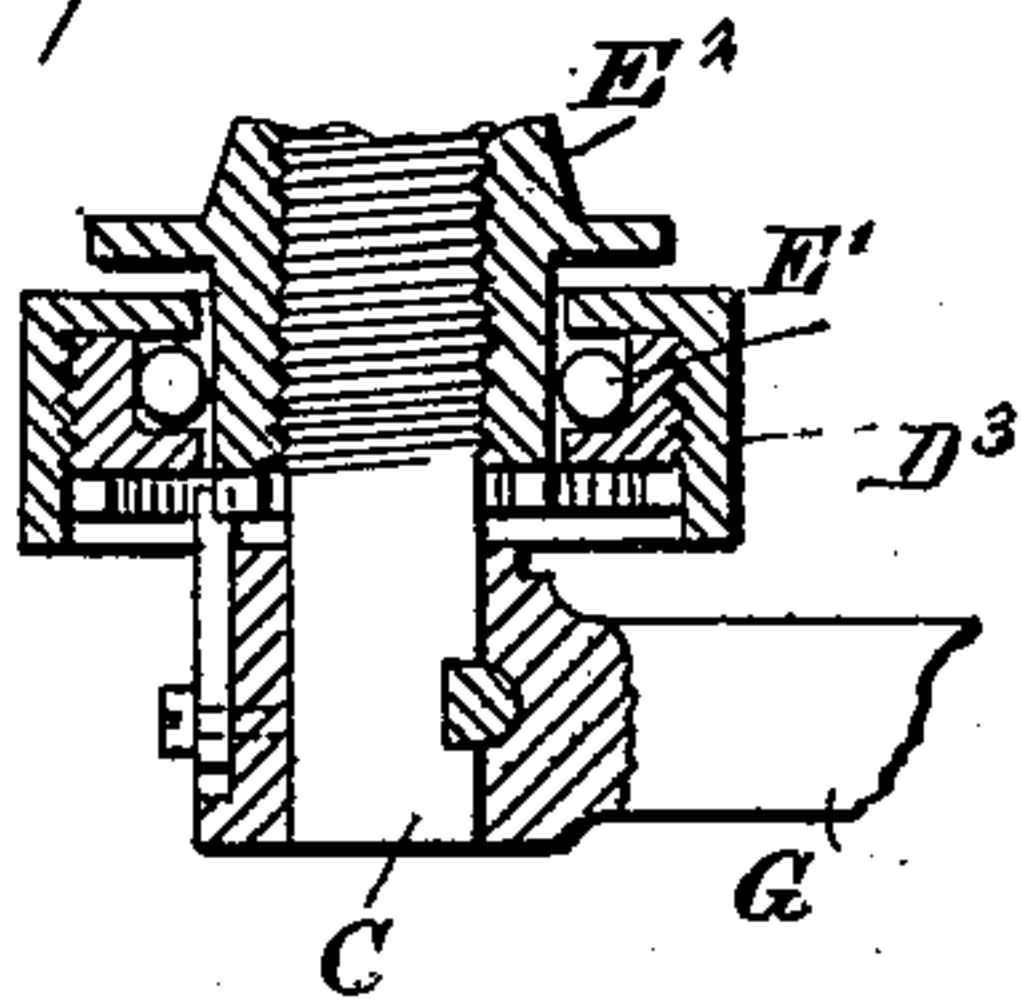
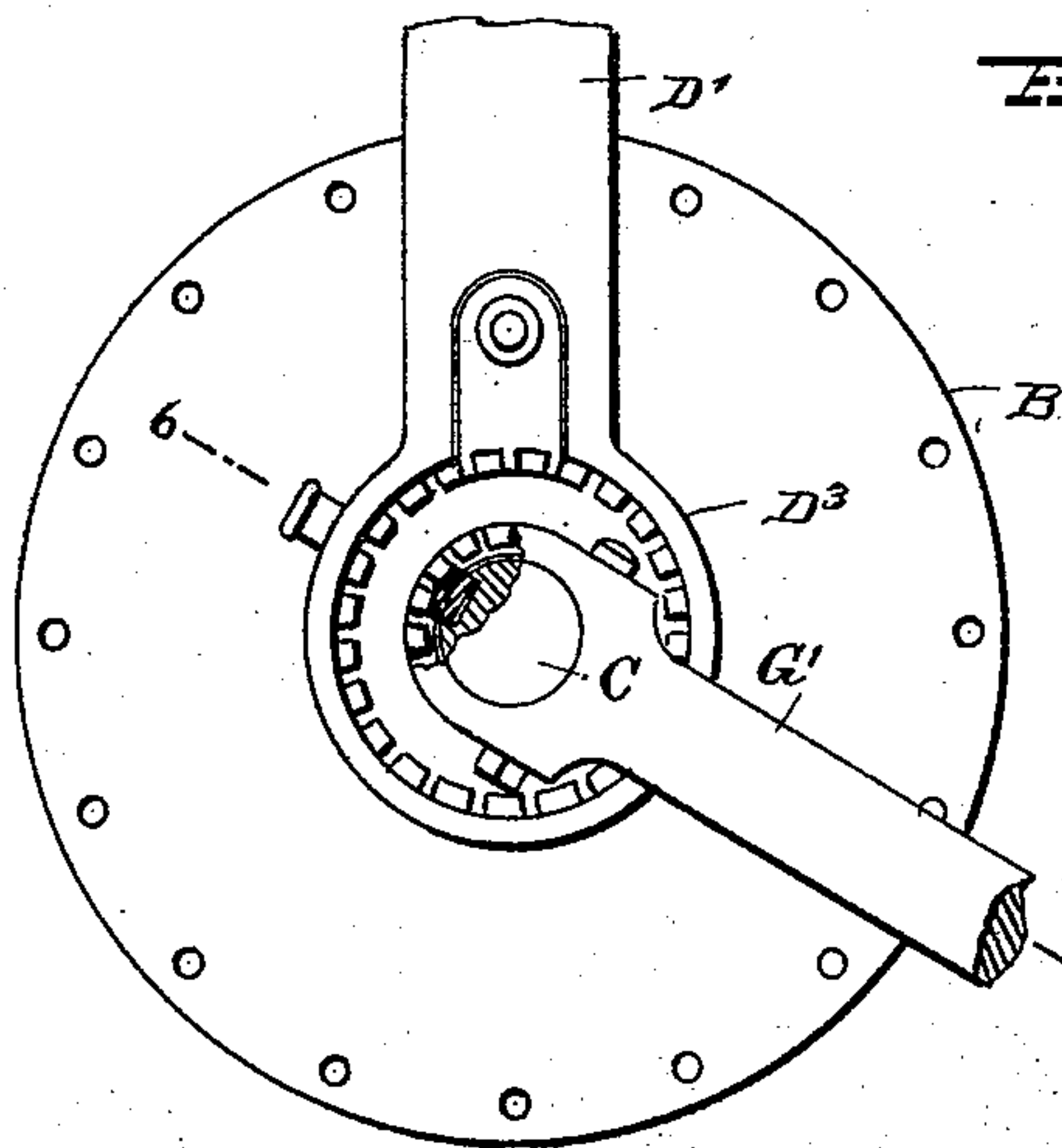


Fig. 5.



WITNESSES:

H. Walker  
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# UNITED STATES PATENT OFFICE.

GEORGE GLYDON, OF BIRMINGHAM, ENGLAND, ASSIGNOR TO THOMAS HILL,  
OF JERSEY CITY, NEW JERSEY.

## SPEED-GEARING FOR CYCLES.

**SPECIFICATION** forming part of Letters Patent No. 510,252, dated December 5, 1893.

Application filed May 29, 1893. Serial No. 475,856. (No model.) Patented in England November 3, 1892, No. 19,782.

*To all whom it may concern:*

Be it known that I, GEORGE GLYDON, a subject of the Queen of Great Britain, residing at Birmingham, in the county of Warwick, England, have invented a new and Improved Speed-Gearing for Cycles and other Machines, (patented in England November 3, 1892, No. 19,782,) of which the following is a full, clear, and exact description.

10 The object of the invention is to provide a new and improved speed gearing, more especially designed for cycles, but equally well adapted for use on other machinery, the gearing being very simple and durable in construction, dust-proof, and arranged to increase the  
15 speed of the driven wheel.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

25 Figure 1 is a side elevation of the improvement as applied on a bicycle. Fig. 2 is an enlarged front elevation of the improvement. Fig. 3 is a transverse section of the same on the line 3—3 of Fig. 2. Fig. 4 is a sectional side  
30 elevation of the same on the line 4—4 of Fig. 3. Fig. 5 is a rear side elevation of the same, with parts in section; and Fig. 6 is a transverse section of the same on the line 6—6 of Fig. 5.

The wheel A to be driven is provided with a hub B, through which passes loosely the spindle or crank shaft C. At one end of the latter, a ball-bearing E is interposed between it and the casing D<sup>2</sup> of the arm D, forming part of the frame of the bicycle. The arm D'  
35 on the other side of the hub B is provided with a casing D<sup>3</sup>, containing a ball bearing E' which is interposed between it and an end thrust bearing E<sup>2</sup>, arranged in the rear end of the hub B and forming part of the spindle  
40 C, as is plainly shown in Fig. 3.

On the ends of the spindle C are secured the usual treadles G and G', and on the said spindle, in the said casing D<sup>2</sup> formed on the frame arm D, is secured an internal gear  
50 wheel H between whose hub and the adjacent end of the hub B, a ball-bearing E<sup>3</sup> is inter-

posed as shown. The internal gear wheel H is in mesh with a number of pinions I, each journaled on a shaft I' secured in an L-shaped casing D<sup>4</sup>, secured to the inner end of the casing D<sup>2</sup> held on the arm D, as is plainly  
55 shown in Fig. 3.

Studs D<sup>5</sup> held in the vertical arm of the casing D<sup>4</sup> support a ring D<sup>6</sup> which forms part of the bearing for the shafts I'. The pinions I are in mesh with pinions J, journaled on shafts J' supported in the frame D<sup>4</sup> and ring D<sup>6</sup>, similar to the shafts I'. This second set of pinions J is in mesh with a spur wheel K formed or secured on the forward end of the  
60 hub B, as is plainly shown in Figs. 3 and 4.

The casing D<sup>4</sup> forming the bearing for the pinions I and J extends into a casing B' fixed on the hub B, so that the gearing inclosed in the two casings is protected from dust and other impurities. The several casings B', D<sup>4</sup> and D<sup>2</sup>, also form a receptacle for the oil or other lubricant, by which the several parts of the gearing are continuously lubricated.

The operation is as follows: When the spindle C is turned by actuating the treadles G and G' in the usual manner, then the internal gear wheel H rotating with the said spindle causes the pinions I to revolve, and as the latter are in mesh with the pinions J, the latter are rotated, and consequently the gear wheel K in mesh with the said pinions J is rotated, so that the hub B carrying the said gear wheel K revolves and causes turning of the wheel A in the same direction in which the treadles are turned. Now, it will be seen that different speeds can be obtained by making the internal gear wheel H or the spur wheel K on the hub with a greater or lesser number of teeth in proportion. For instance, if the wheel H has, say twenty-eight teeth, and the spur wheel K fourteen teeth, then the revolution of the spur or driven wheel K, and consequently of the wheel A, will be just double the number of the revolutions of the spindle C. It is understood that the gear wheels K and H are connected with each other by the sets of pinions I and J, which are preferably of the same diameter and have the same number of teeth, as shown in Fig. 4.

By arranging the casing D<sup>2</sup> on the arm D and securing on the inner face of the said



casing the auxiliary casing  $D^4$ , and inclosing the latter in the hub casing  $B'$ , I provide a dust-proof covering for the gearing, so that the latter is not liable to be clogged up by  
5 dust and other impurities.

The ball bearings  $E$  and  $E'$  in the casings  $D^2$  and  $D^3$  of the frame arms  $D$  and  $D'$  respectively are provided with loose adjusting sleeves to keep them in proper position on  
10 the spindle  $C$ .

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a device of the class described, the  
15 combination with a fixed frame supporting a casing, of two sets of pinions journaled in the said casing and in mesh with one another, an internal gear wheel secured on the spindle and in mesh with one set of the said pinions,  
20 and a spur wheel on the part to be driven

and in mesh with the other set of the said pinions, substantially as shown and described.

2. In a device of the class described, the combination with a fixed frame supporting a casing, of two sets of pinions journaled in  
25 the said casing and in mesh with one another, an internal gear wheel secured on the spindle and in mesh with one set of the said pinions, a spur wheel in mesh with the second set of pinions, and a hub carrying the said spur  
30 wheel and forming part of the wheel to be driven, the said hub being provided with a casing forming a cover for the casings supporting the said pinions, substantially as shown and described.

GEORGE GLYDON.

Witnesses:

JOHN WHYMAN,  
HARRY AMPHLETT.