

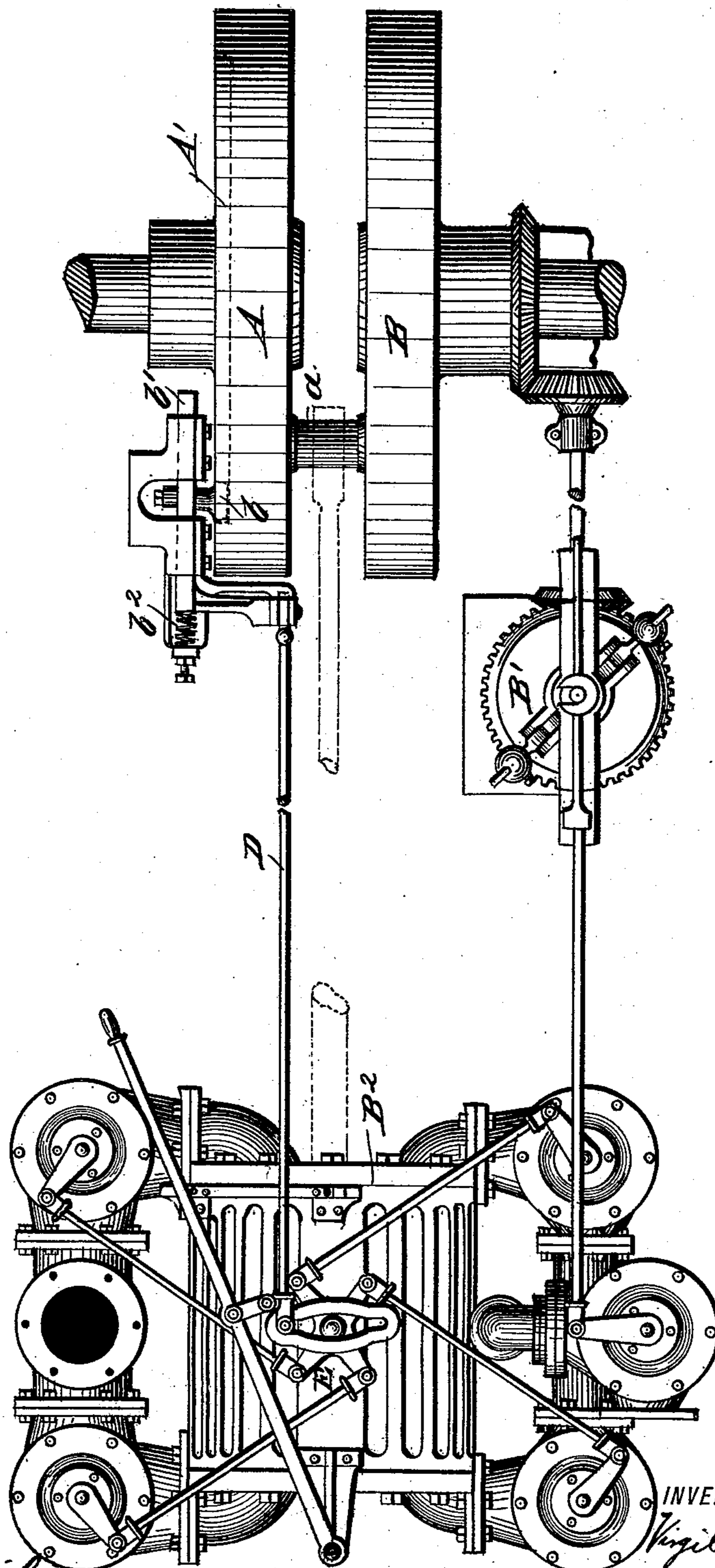
(No Model.)

2 Sheets—Sheet 1.

V. W. BLANCHARD.
CRANK WHEEL.

No. 413,911.

Patented Oct. 29, 1889.



WITNESSES

Phil. G. Distenfeld
A. E. Dowell

INVENTOR

By *his Attorney*
W. Alexander

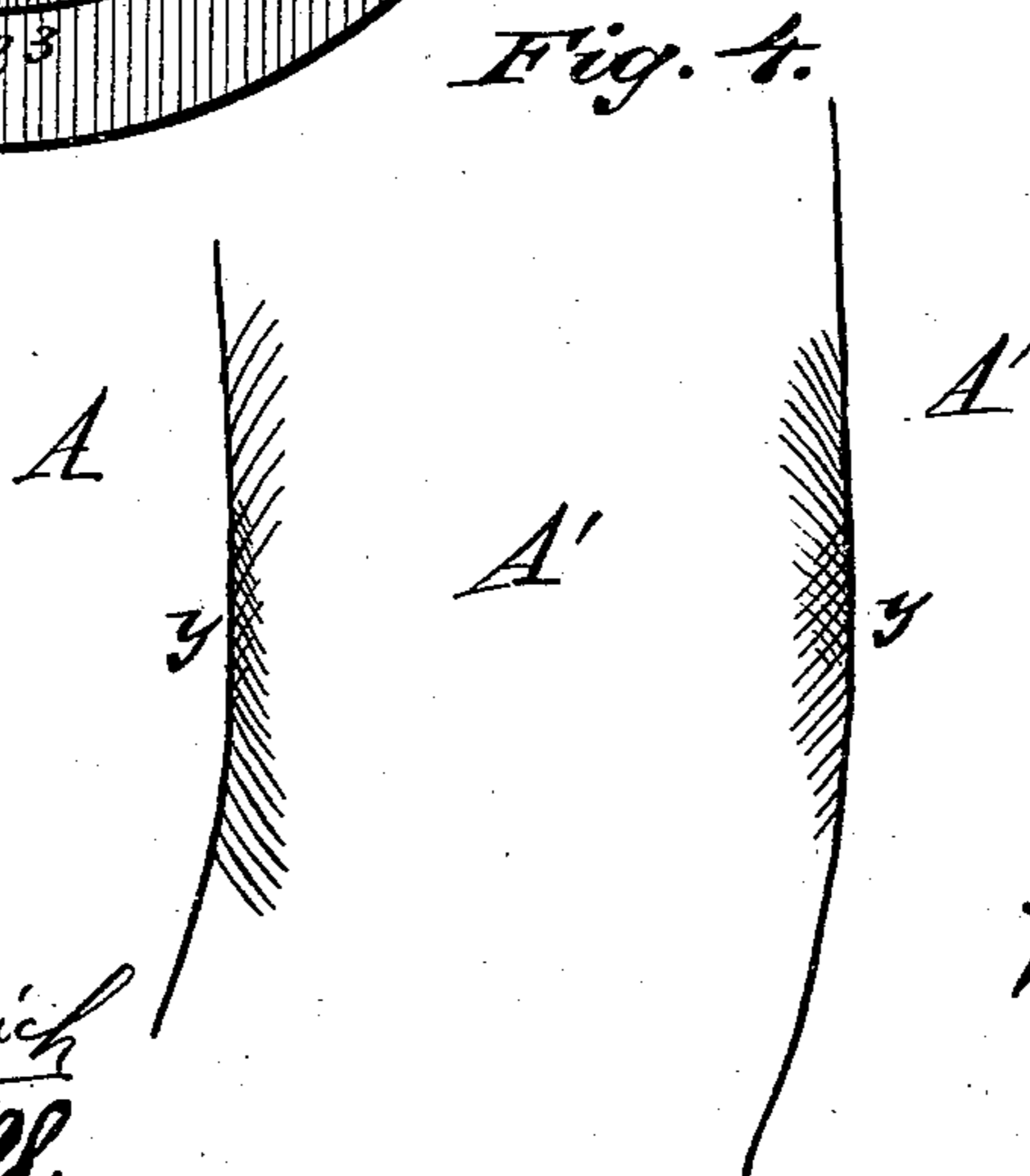
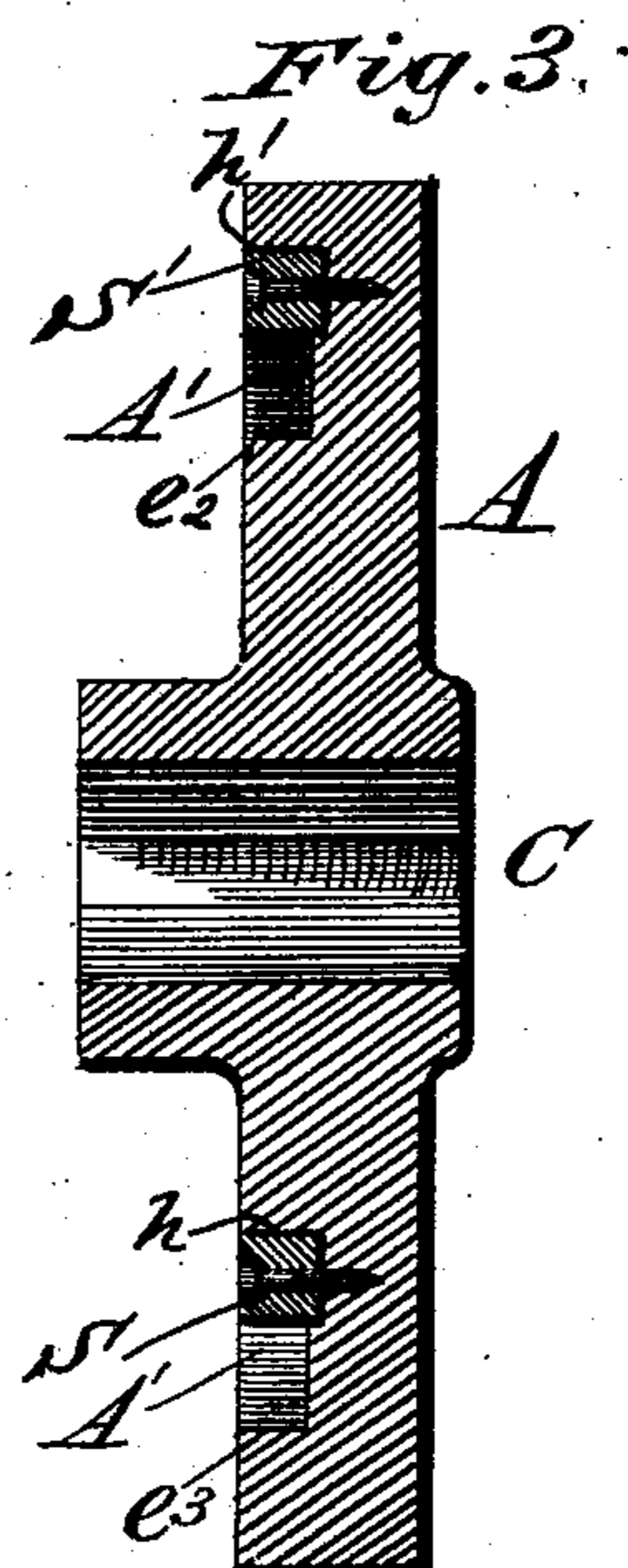
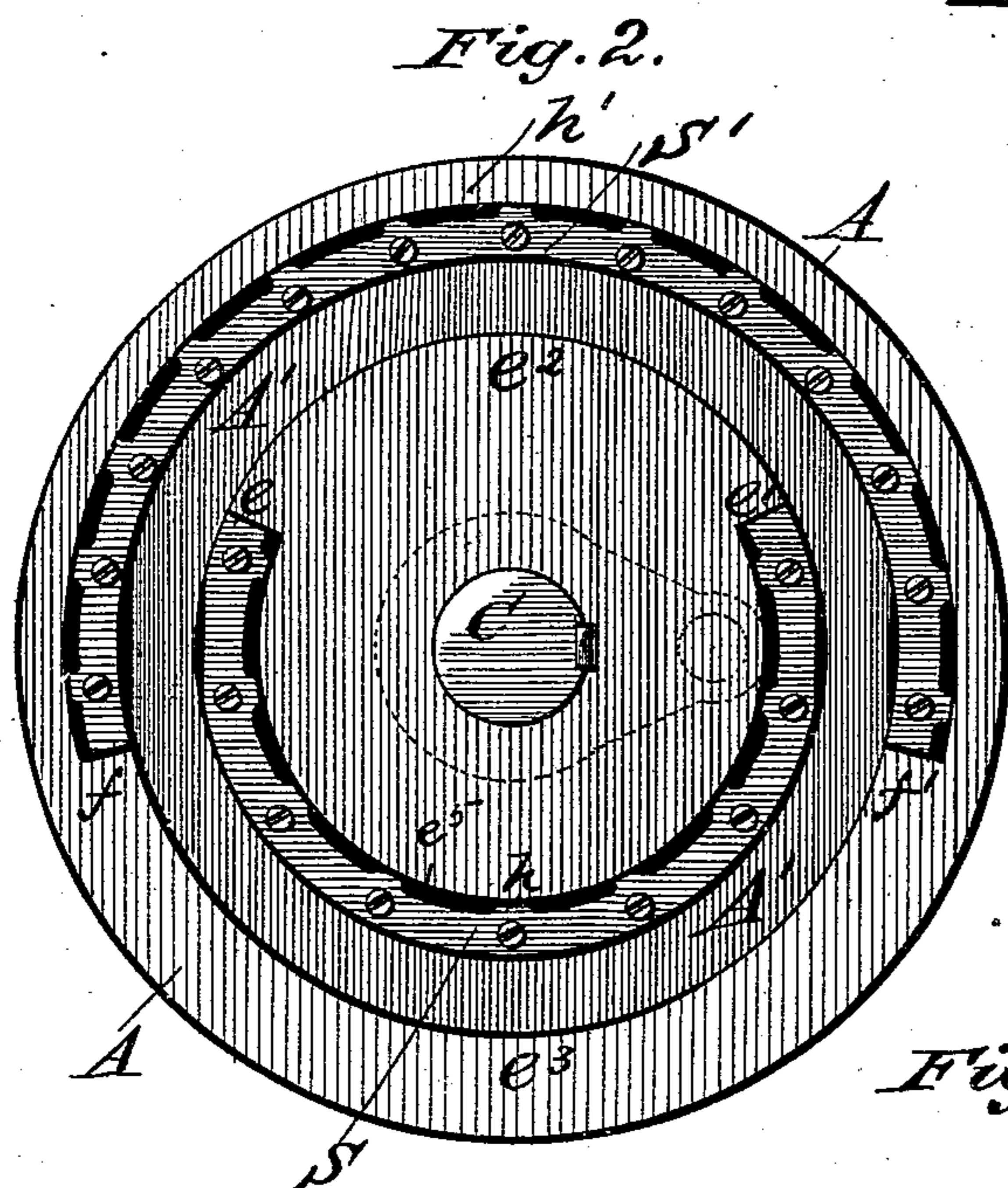
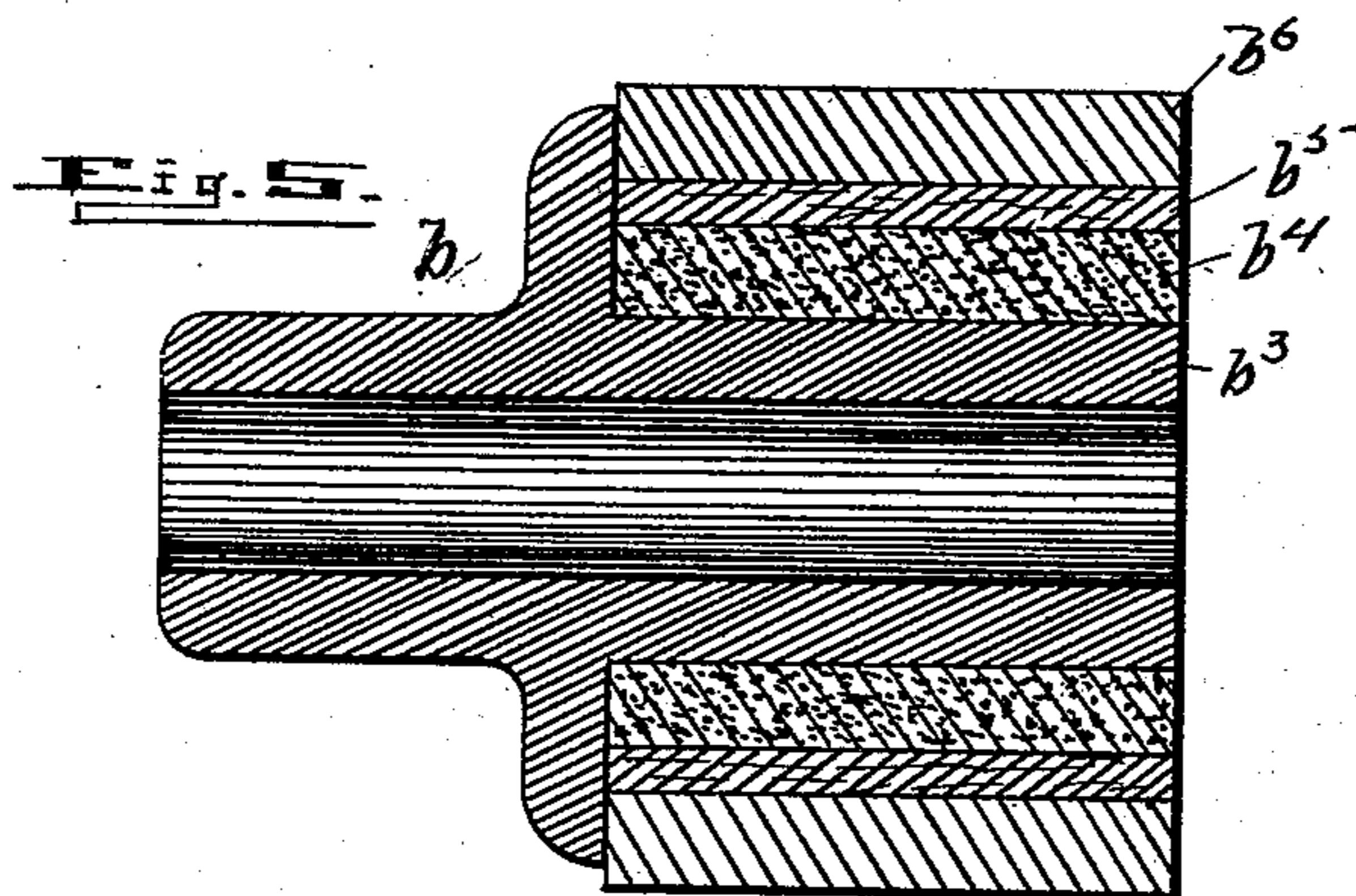
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2 Sheets—Sheet 2.

V. W. BLANCHARD.
CRANK WHEEL.

No. 413,911.

Patented Oct. 29, 1889.



WITNESSES

Phil C. Dietrich
A. E. Dowell

INVENTOR

Virgil W. Blanchard
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UNITED STATES PATENT OFFICE.

VIRGIL W. BLANCHARD, OF NEW YORK, N. Y., ASSIGNOR TO JOSEPH A. DAVIS, OF SAME PLACE.

CRANK-WHEEL.

SPECIFICATION forming part of Letters Patent No. 413,911, dated October 29, 1889.

Application filed April 10, 1889. Serial No. 306,640. (No model.)

To all whom it may concern:

Be it known that I, VIRGIL W. BLANCHARD, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Crank-Wheels; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification, in which—

Figure 1 is a plan view showing my improved crank and wheel and its connection with the valve-gear of a steam-engine cylinder. Fig. 2 is a face view of my improved crank-wheel; Fig. 3, a diametrical section through the same. Fig. 4 is an enlarged diagram showing the peculiar-shaped curves in the cam-groove of the crank-wheel. Fig. 5 is a detail sectional view of the roller for running in the groove of the crank-wheel.

This invention is an improved crank-wheel having a cam-groove in its face, and its object is to provide novel means for adjusting and truing the walls of said cam-groove, and to effect this result cheaply and accurately without chiseling or cutting away the metal; and the invention consists in the novel construction of such wheel and in certain other devices hereinafter clearly described and claimed.

In the drawings, Fig. 1, is shown an engine and valve-gear to which my improved crank-wheel is applicable, and I have shown the connections of the cam with said valve-gear, which I do not claim under this application.

The letter A designates my improved crank-wheel, having a cam-groove A' in its outer face. This wheel is keyed on a shaft C and connected by a wrist-pin a to a wheel B, which actuates the governor mechanism B', which regulates the throttle-valve that admits steam to a cylinder B². In the cam-groove of wheel A is engaged a roller b, which turns on a shaft that is fixed to a reciprocating slide b', provided with a retracting-spring b², for holding the roller b in contact with one of the edges of the cam-groove A' in wheel A. This mechanism is suitably connected by a rod D to reversing mechanism, an oscillating spider E being employed on the steam-cylinder B² for

actuating through the medium of connecting-rods and crank-arms the inlet and exhaust valve, all four of which are actuated by the roller b in the cam-groove of the crank-wheel by the described connections. I have referred to these parts generally merely for the purpose of showing the object of my improved crank-wheel and its application to a valve-gear.

The roller b has a hub b³, surrounded by a yielding annulus b⁴, of rubber or other suitable material, around which is a layer of heat-non-conducting material b⁵, as asbestos, and over all is shrunk a metal tire b⁶. By this construction the roller is given a yielding movement, so that the motion imparted therefrom to the slide and connecting-rod D is smooth and uniform.

I will now refer to Figs. 2, 3, and 4. It will be observed that the crank-wheel A is a solid massive disk, which is made of iron or steel, with a deep cam-groove A' in its lateral surface, which groove is annular, and is bounded internally from e to e' by the solid central portion e², the remaining part of the internal boundary being cut out, as indicated at e⁵, and filled in by a narrow removable and adjustable segment S, which is secured in a recess h, as shown in Figs. 2 and 3. The groove A' is bounded externally from f to f' by a narrow segment S', secured in a recess h', made in the solid outer portion e³ of the wheel A, the remaining outer boundary of the groove being formed by said solid outer portion e³. The segments are securely fastened in their places by proper bolts or in other manner found convenient. At y y slight deflections of the cam-groove from a true circle are made, at which points in the revolution of the crank-wheel A a motion is given to the roller b and its slide, and thence to the engine-valves. It will be observed that the inner and outer segments S S' are secured to the crank-wheel at diametrically-opposite sides of the cam-groove, but pass by each other at their ends, which are at the points y y, and hence by properly finishing the faces of said segments and securing them in position on the crank-wheel these deflections are made at the proper points on the groove without the need of

5 dressing the cam-groove in the wheel itself. The crank-wheel can thus be finished in an ordinary lathe, and the segments S S' properly dressed and subsequently secured in the crank-wheel groove, thus greatly cheapening the cost of construction of the cam-groove and insuring perfect accuracy. The segments can of course be removed and replaced or redressed to form deflections at different points
10 or of different angles.

Having thus described my invention, what I claim is—

1. The herein-described crank-wheel, having an annular groove in its face, in combination with diametrically-opposite segments secured to said wheel and forming parts of the walls of said groove, substantially as and for the purpose specified.
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2. A crank-wheel for the purpose described, having a cam-groove A, with eccentric deflections formed by inserted segments, substantially as and for the purpose specified.
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3. The combination, with the crank-wheel A, having an annular groove in its face, of the removable segments S S', secured in dia-
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metrically-opposite recesses in the face of the wheel respectively on the inner and outer sides of said groove, as and for the purpose specified.

4. The combination, with the annularly-grooved crank-wheel, of diametrically-opposite removable segments secured thereto and having their adjoining opposite ends dressed to form the deflections of said groove, as and for the purpose specified.
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5. The combination, with the crank-wheel having an annular cam-groove in its face, substantially as described, of the roller b, having a yielding annular core b⁴, a non-conducting layer b⁵ exterior to said core, and a metal tire b⁶, all substantially as and for the purpose specified.
35 40

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

VIRGIL W. BLANCHARD.

Witnesses:

W. R. KEYWORTH,
F. O. MCCLEARY.