

No. 705,782.

Patented July 29, 1902.

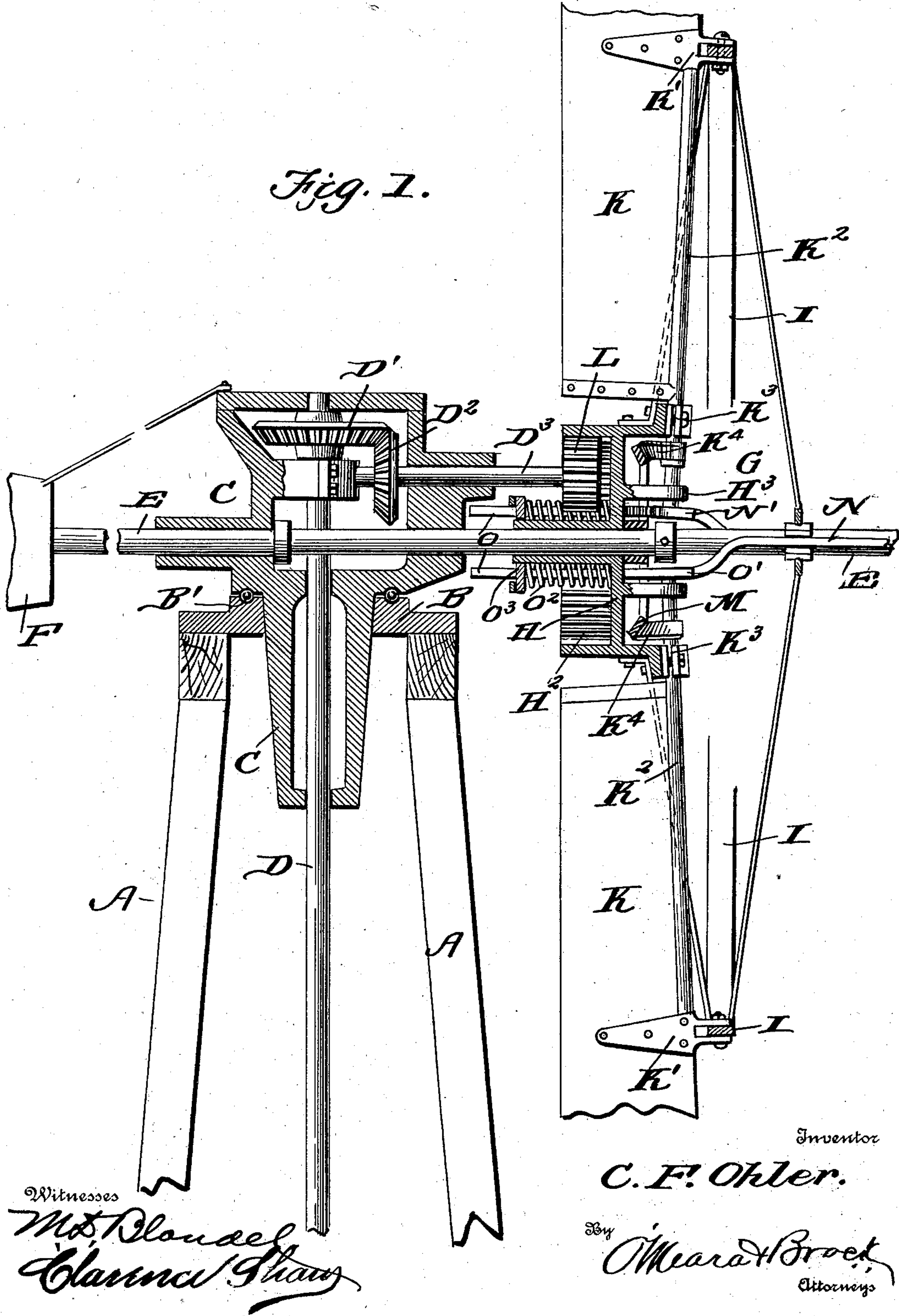
C. F. OHLER.  
GOVERNOR FOR WINDMILLS.

(Application filed May 3, 1902.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



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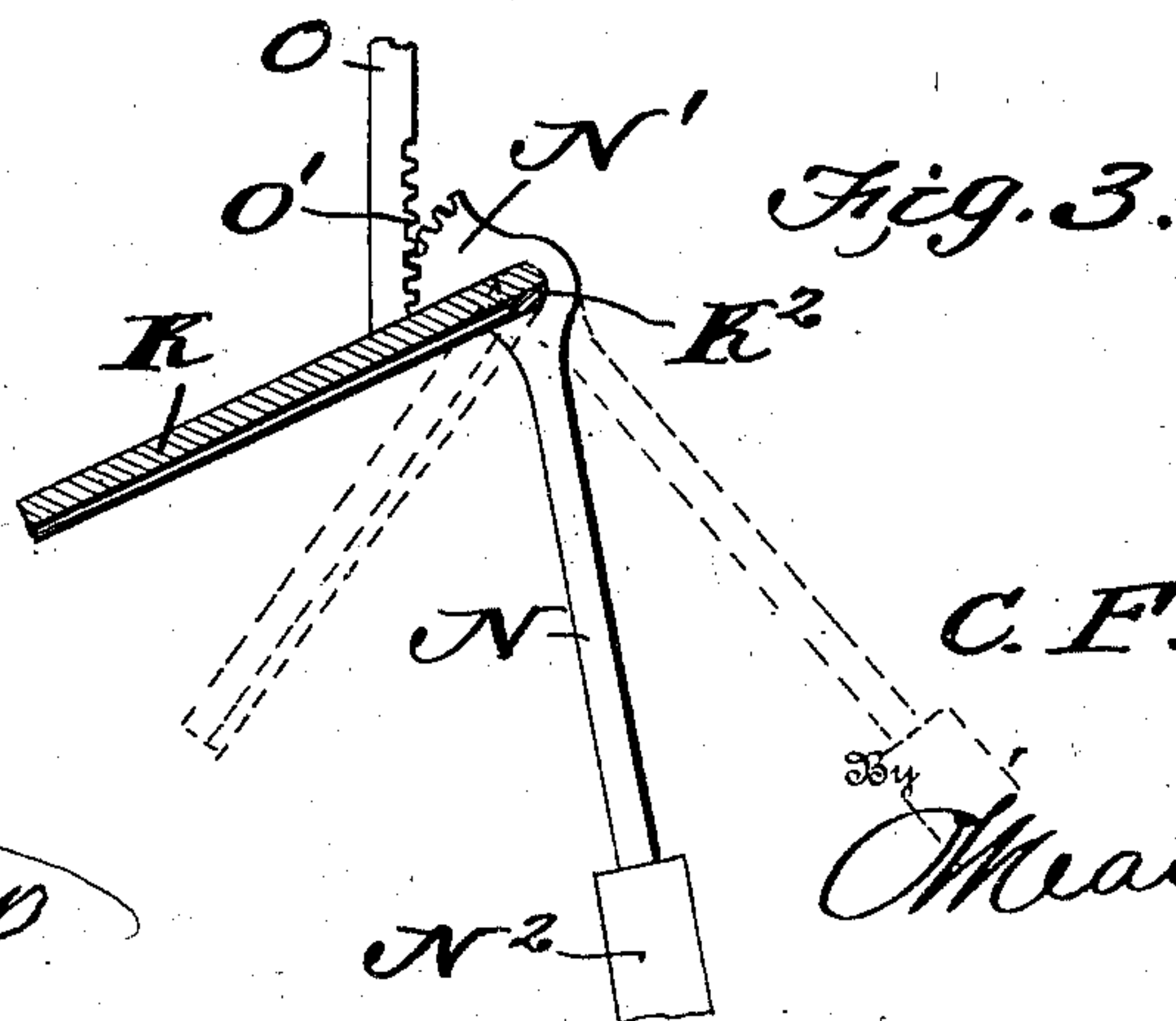
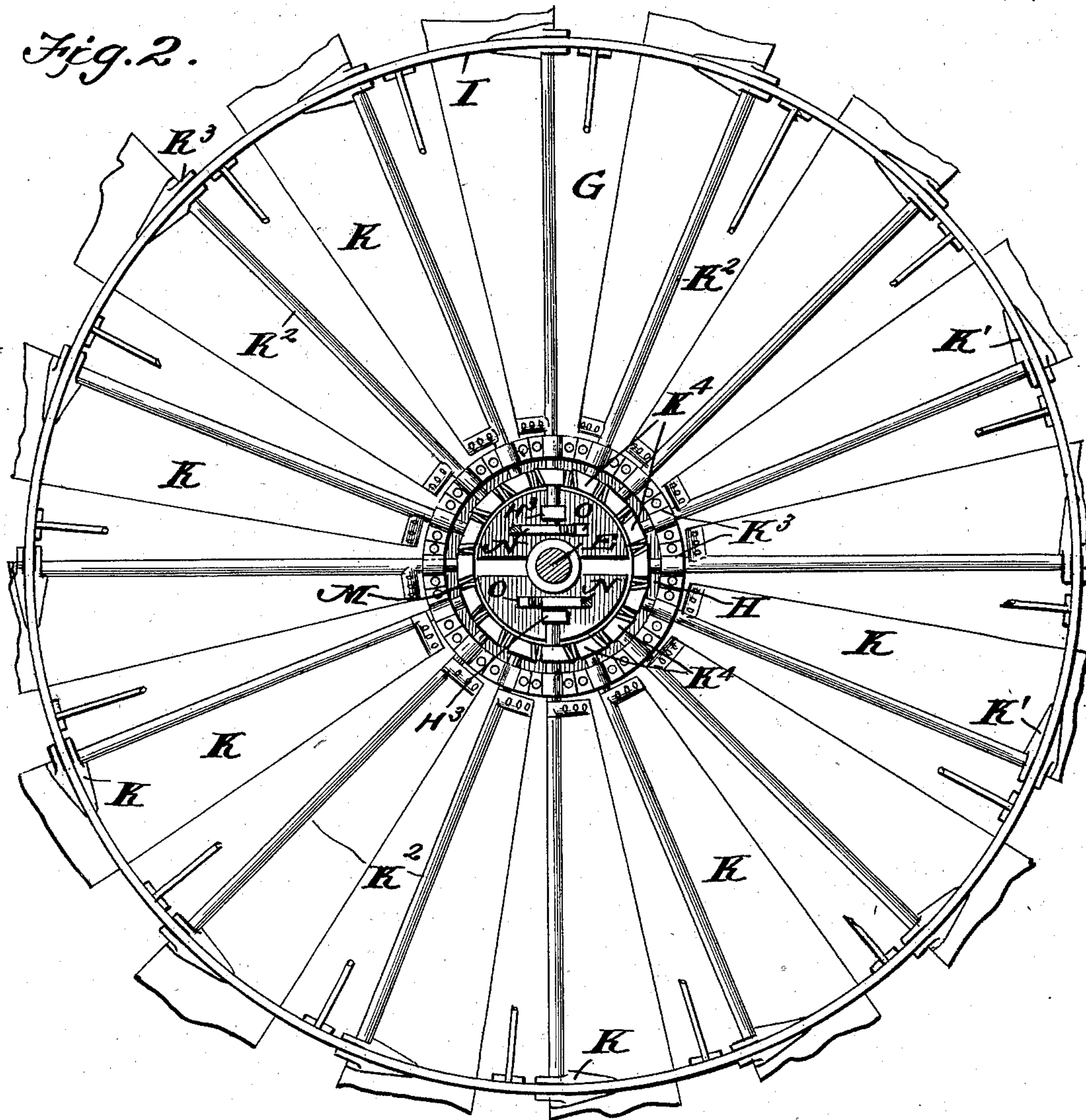
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3 Sheets—Sheet 2.

Fig. 2.



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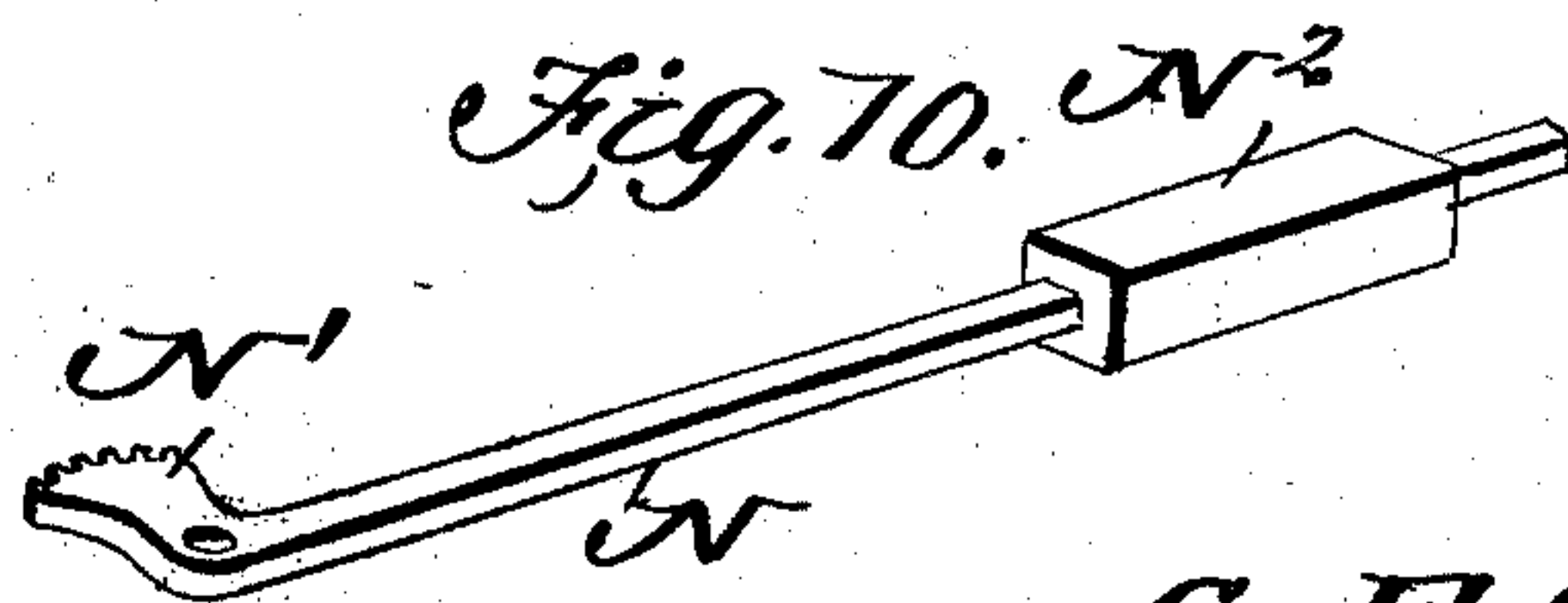
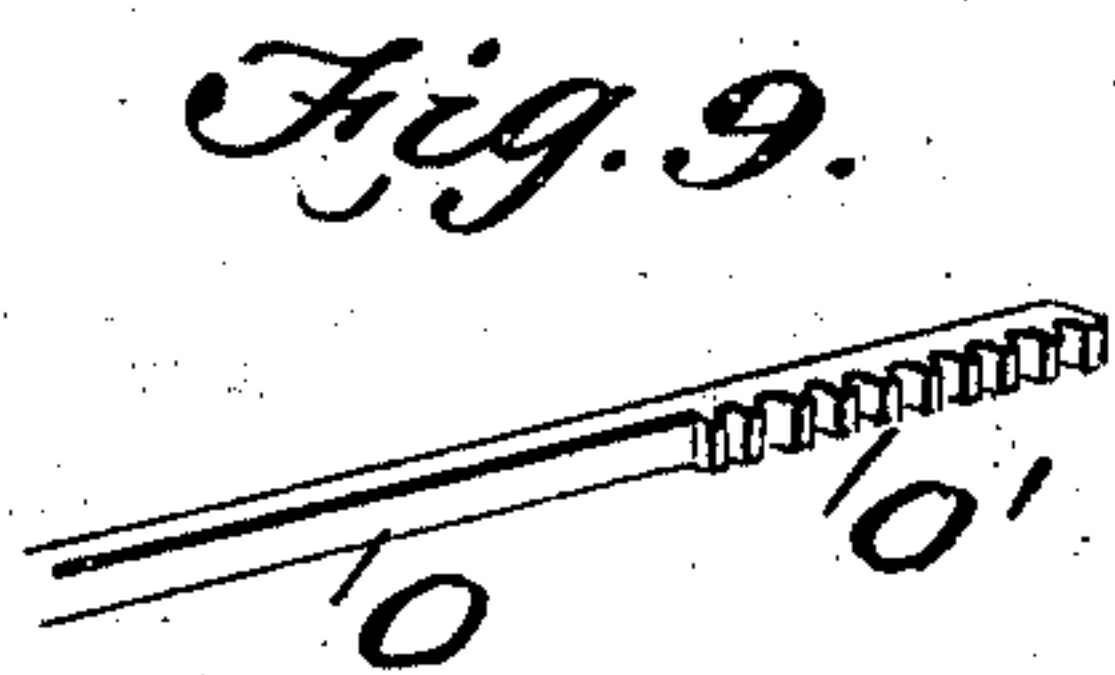
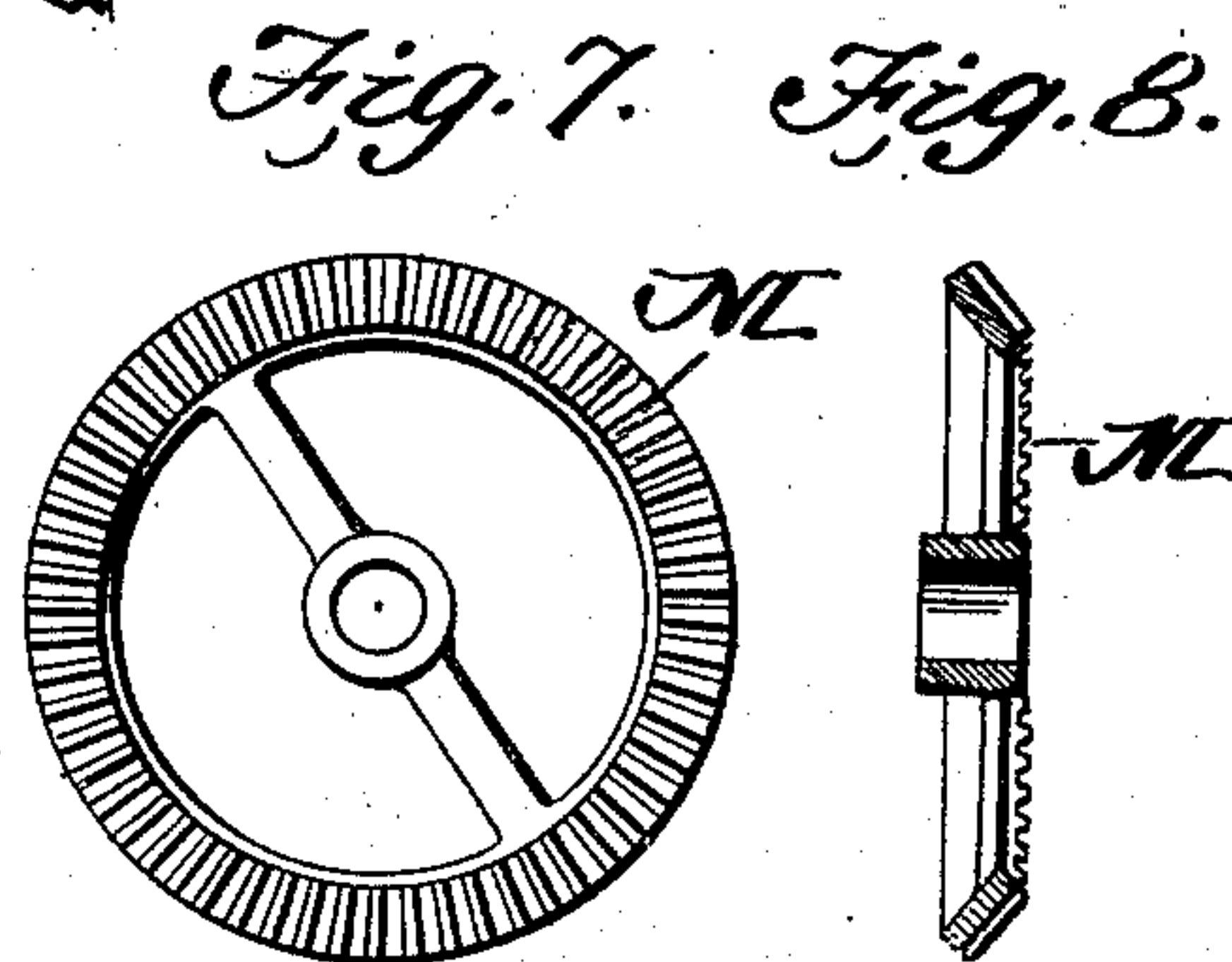
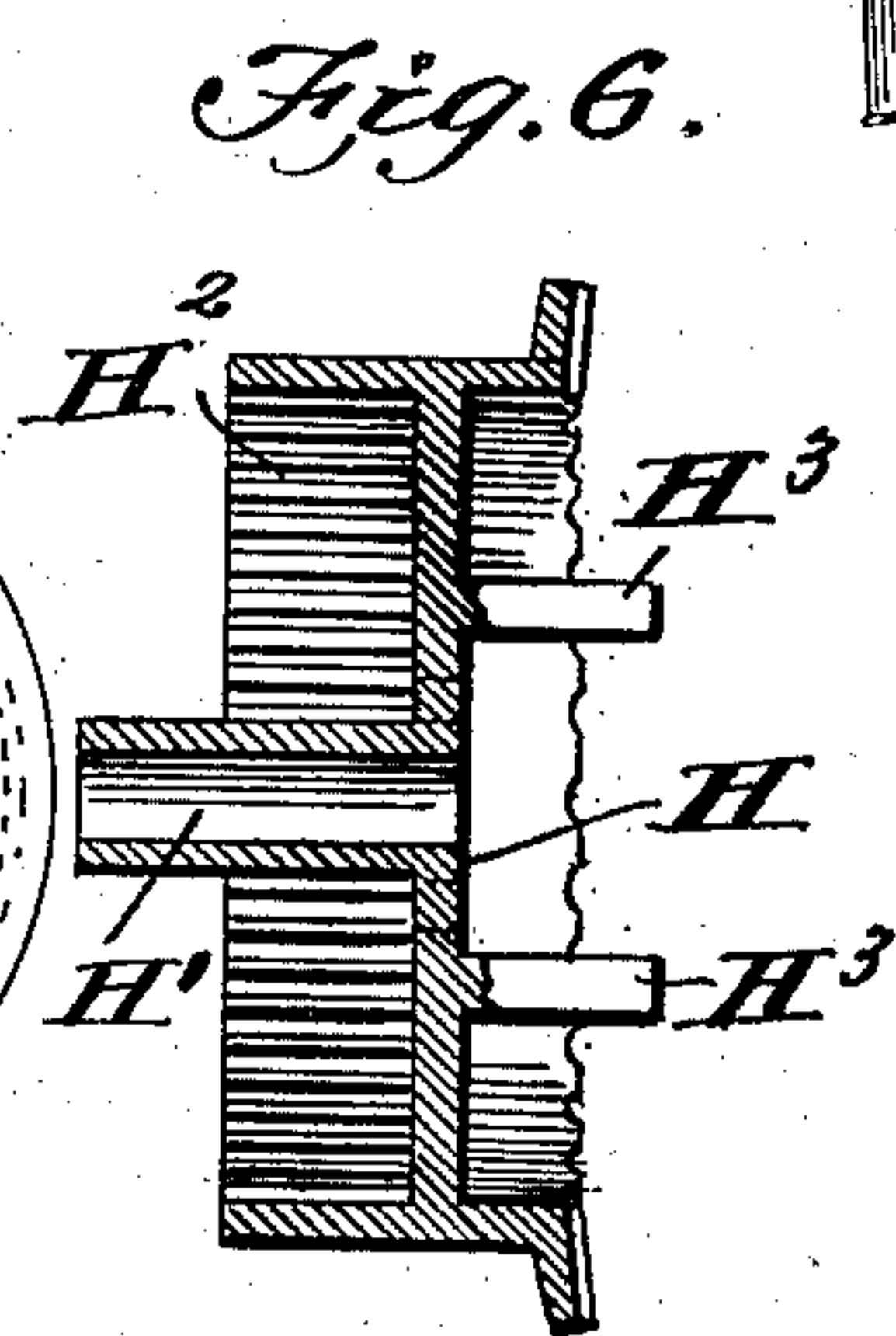
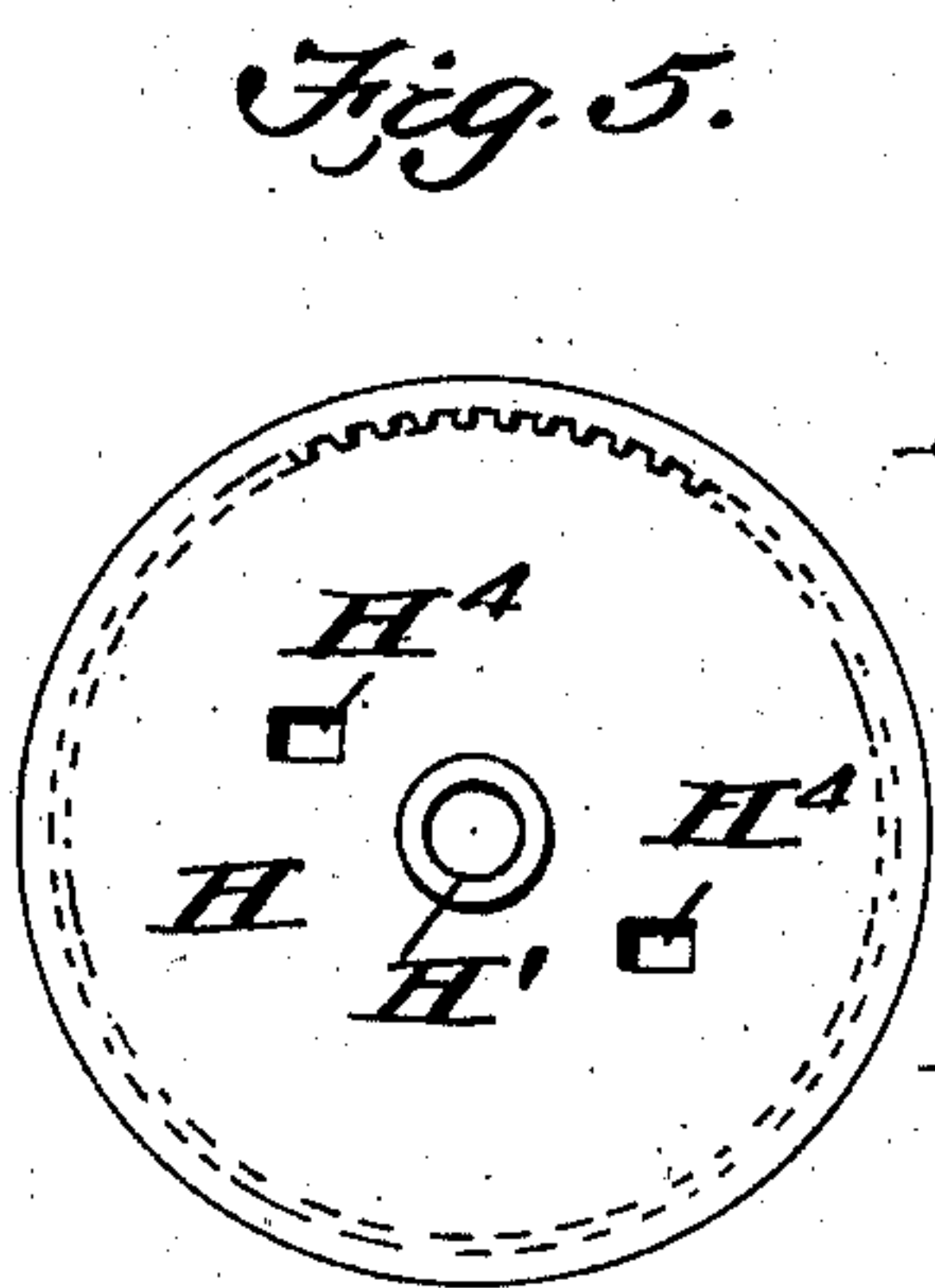
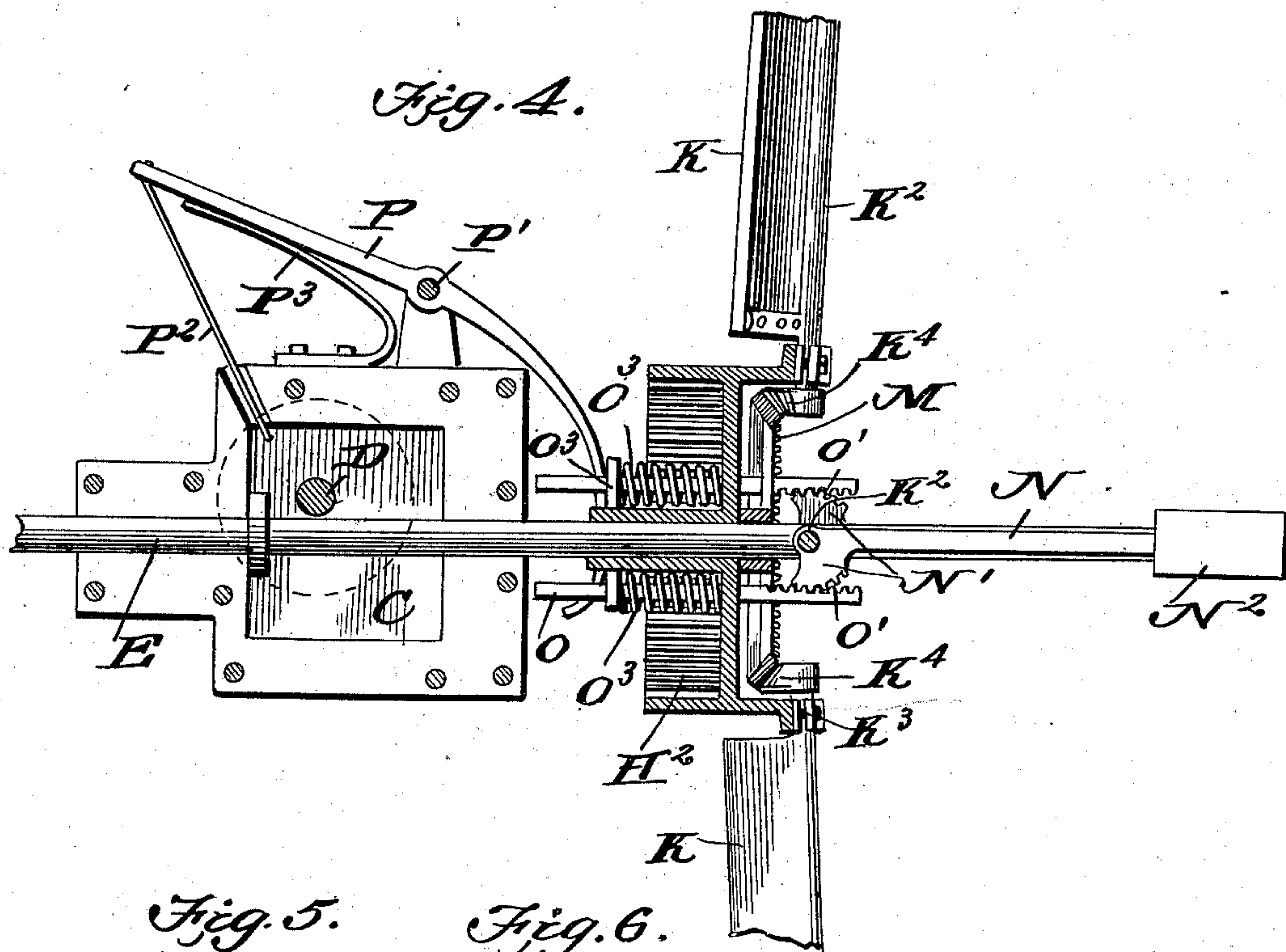
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# UNITED STATES PATENT OFFICE.

CAMERON FRANKLING OHLER, OF EMMITTSBURG, MARYLAND.

## GOVERNOR FOR WINDMILLS.

SPECIFICATION forming part of Letters Patent No. 705,782, dated July 29, 1902.

Application filed May 3, 1902. Serial No. 105,824. (No model.)

*To all whom it may concern:*

Be it known that I, CAMERON FRANKLING OHLER, a citizen of the United States, residing at Emmittsburg, in the county of Frederick and State of Maryland, have invented a new and useful Governor for Windmills, of which the following is a specification.

This invention relates generally to windmills or wind-wheels, and more particularly to an improved governor for wind-wheels for the purpose of regulating their speed.

The object of the invention is to provide a simple and efficient appliance which can be used in connection with a wind-wheel for the purpose of feathering the blades for the purpose of increasing or decreasing the speed of the wheel; and with this object in view the invention consists in the novel features of construction and combination, all of which will be fully described hereinafter, and pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is a view, partly in section and partly in elevation, illustrating the general construction of my invention. Fig. 2 is a face view of the wheel, certain parts being shown in section. Fig. 3 is a diagrammatic view illustrating the operation of the governor. Fig. 4 is a horizontal sectional view of the governor mechanism. Fig. 5 is a rear view of the wheel-hub. Fig. 6 is a sectional view of the same. Fig. 7 is a face view of the beveled gear arranged within the hub for the purpose of shifting the blades. Fig. 8 is a sectional view of the same. Fig. 9 is a detail perspective view showing one of the rack-bars. Fig. 10 is a detail perspective view of one of the governor-arms.

Referring to the drawings, A indicates the usual construction of derrick, upon which is mounted the cap-plate B, having ball-bearing grooves within which are arranged the antifriction-balls B', and resting within the cap-plate B and upon the antifriction-balls B' is the casting C, having the depending portions C', in which is journaled the vertical shaft D, having a gear D' mounted upon its upper end which meshes with the beveled gear D<sup>2</sup>, mounted upon a shaft D<sup>3</sup>, journaled in the upper portion of the casting C. The wheel-shaft E is journaled in the casting C and has the vane F attached to its rear end

and carries a wheel G at the outer end, said wheel comprising a hub H, a rim I, and the blades K. The hub H has a tubular portion H', which fits upon the shaft E, and said hub also has an internally-toothed flange H<sup>2</sup>, with which meshes a pinion L, mounted upon the forward end of a shaft D<sup>3</sup>, so that as the hub revolves the pinion is operated, driving the shaft D<sup>3</sup>, which communicates its motion to the shaft D through the medium of the gears D' and D<sup>2</sup>, the blades K being pivotally connected to the rim I by means of hinges K', and each blade has a shank K<sup>2</sup>, which is journaled to the front face of the hub, as shown at K<sup>3</sup>, and the inner end of each shank has a mutilated gear K<sup>4</sup> connected thereto, each mutilated gear intermeshing with a beveled gear M, mounted loosely upon the shaft E and within the front portion of the hub, as most clearly shown in Figs. 1 and 4. Two oppositely-disposed shanks K<sup>2</sup> extend beyond the mutilated gears K<sup>4</sup> and are journaled at their inner ends in the lugs H<sup>3</sup>, projecting forwardly from the face of the hub, and connected to the ends of said extended shanks are the governor-arms N, having toothed segments N' adjacent to their pivoted ends, which mesh with the rack portions O' of the bars O, which slide in the openings H<sup>4</sup>, produced in the face of the hub, passing a considerable distance to the rear of the hub, and are surrounded by coil-springs O<sup>3</sup>, the normal tendency of said springs being to throw the bars rearwardly. A lever P, pivoted at P' to one side of the casting C, bears at its forward end upon the connecting-plate O<sup>3</sup> and has an operating-cord P<sup>2</sup> connected to its rear end by means of which the lever can be forced against the connecting-plate O<sup>3</sup> for the purpose of forcing the rods O forwardly for the purpose of feathering the blades, a spring P<sup>3</sup> bearing normally against the lever P and holding it out of contact.

A weight N<sup>2</sup> is adjustably mounted upon each governor-arm N, and these governor-arms normally rest parallel with and adjacent to the wheel axle or shaft E. When the said governor-arms are in that position, the blades are turned so as to receive the wind; but should the wind become so strong as to drive the wheel at an excessive rate of speed the tendency would be for the arms to assume a position transverse to the wheel-shaft,



and during such movement the toothed segments N' would operate against the spring-actuated rack-bars O. As the governor-arms assume a position at right angles to the wheel-shaft or tend to assume such position they partially rotate the shanks to which they are connected, and this partial rotation of these shanks is communicated to all of the other shanks through the medium of the gear M and the mutilated gears K<sup>4</sup>, so that all of the blades will be feathered or shifted, so as to present less surface to the face of the wind, and the speed of the wheel will be correspondingly reduced, and as the speed of the wheel becomes normal the spring-actuated rack-bars acting upon the toothed segments will cause the governor-arms to assume their normal positions.

It will thus be seen that I provide an exceedingly simple and highly-efficient construction of windmill regulator or governor.

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

1. A windmill-governor comprising in combination a wheel having a series of independently-movable blades, means contained within the hub of the wheel for simultaneously shifting the said blades, governor-arms arranged substantially parallel with the wheel-shaft connected directly to two of the blades and adapted to operate the means for shifting all of the blades together with spring-actuated means for returning all of the parts to their normal positions, substantially as specified.

2. In a windmill-governor, a wheel comprising a hub and rim, a series of blades hinged to the rim and having shanks pivotally connected to the hub, the governor-arms connected to two of the shanks, the mutilated gears carried by all of the shanks, the gear-wheel adapted to mesh with said mutilated

gears, and the spring-actuated device connected to the governor-arms for returning them to their normal positions, substantially as described.

3. A wind-wheel governor comprising in combination a wheel-hub, the blades, rim and shanks, mutilated gears carried by the shanks, the gear-wheel arranged within the hub and adapted to mesh with said mutilated gears, the spring-actuated rack-bars extending longitudinally through the hub, the governor-arms connected to two of the shanks, and meshing with the said rack-bars, and a lever adapted to operate the spring-actuated rack-bars, for the purpose specified.

4. The combination with a derrick and casting, of the wheel-shaft journaled in the casting, the hub mounted upon said wheel-shaft, the said hub having the internally-toothed flange, the pinion meshing with said flange, the shaft carrying said pinion journaled in the casting and provided with a beveled gear, the vertical shaft having a beveled gear meshing with the aforesaid beveled gear, the wheel-rim, the blades hinged to the said rim, shanks attached to the blades and journaled upon the hub, the governor-arms attached to two of the said shanks, the mutilated gears arranged upon the inner ends of all the shanks, the gear-wheel mounted loosely upon the wheel-shaft within the hub and adapted to mesh with the said mutilated gears, the rack-bars extending through the hub, the toothed segments carried by the governor-arms, and adapted to mesh with the rack-bars, the springs surrounding said bars, the connecting-plate, the lever adapted to press against said plate, and means for operating the said lever for the purpose specified.

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