

No. 741,005.

PATENTED OCT. 13, 1903.

J. ALSTON.

MOTION CHANGING GEAR FOR WINDMILLS.

APPLICATION FILED MAR. 30, 1903.

NO MODEL.

Fig. 1

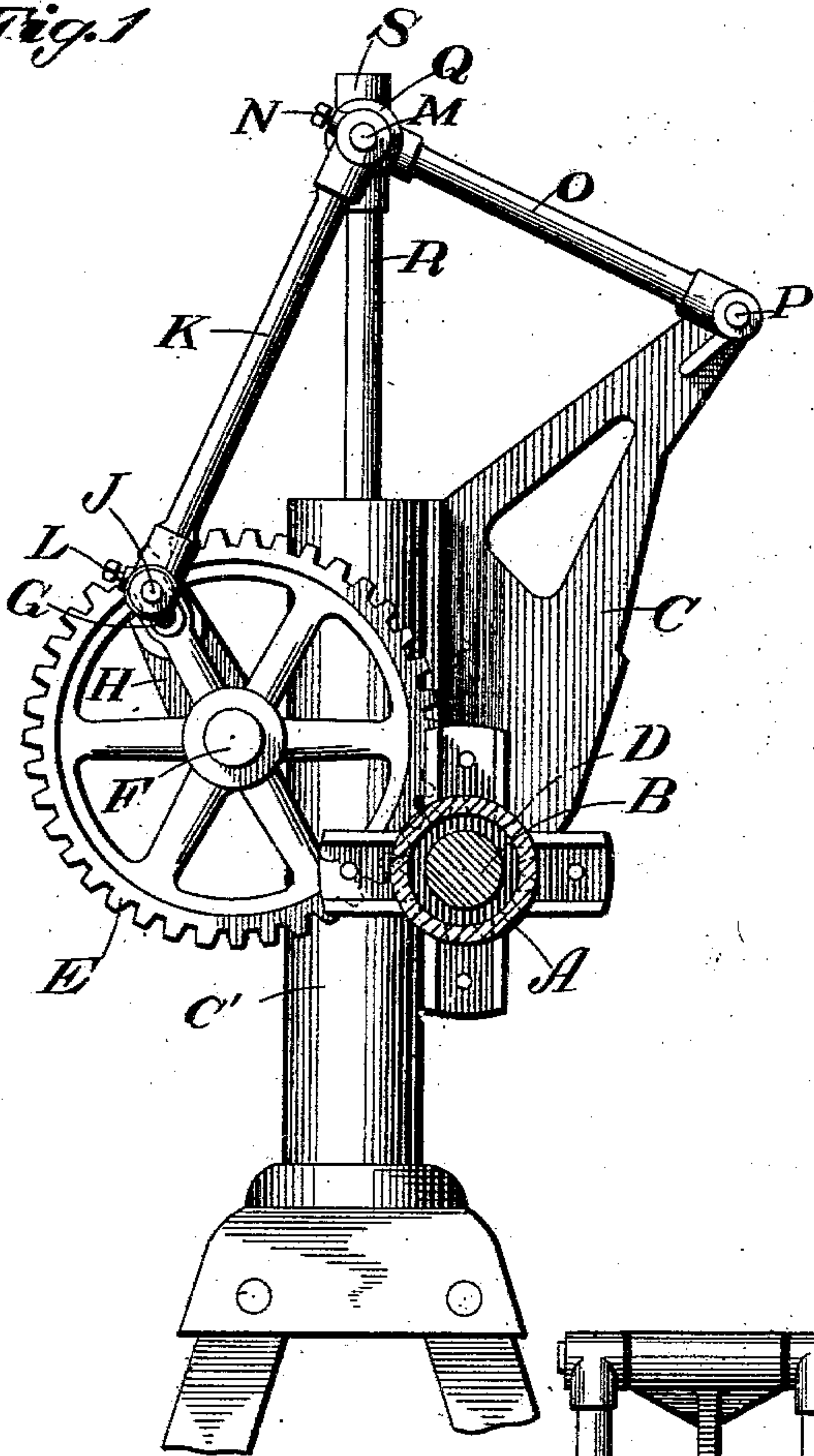


Fig. 2

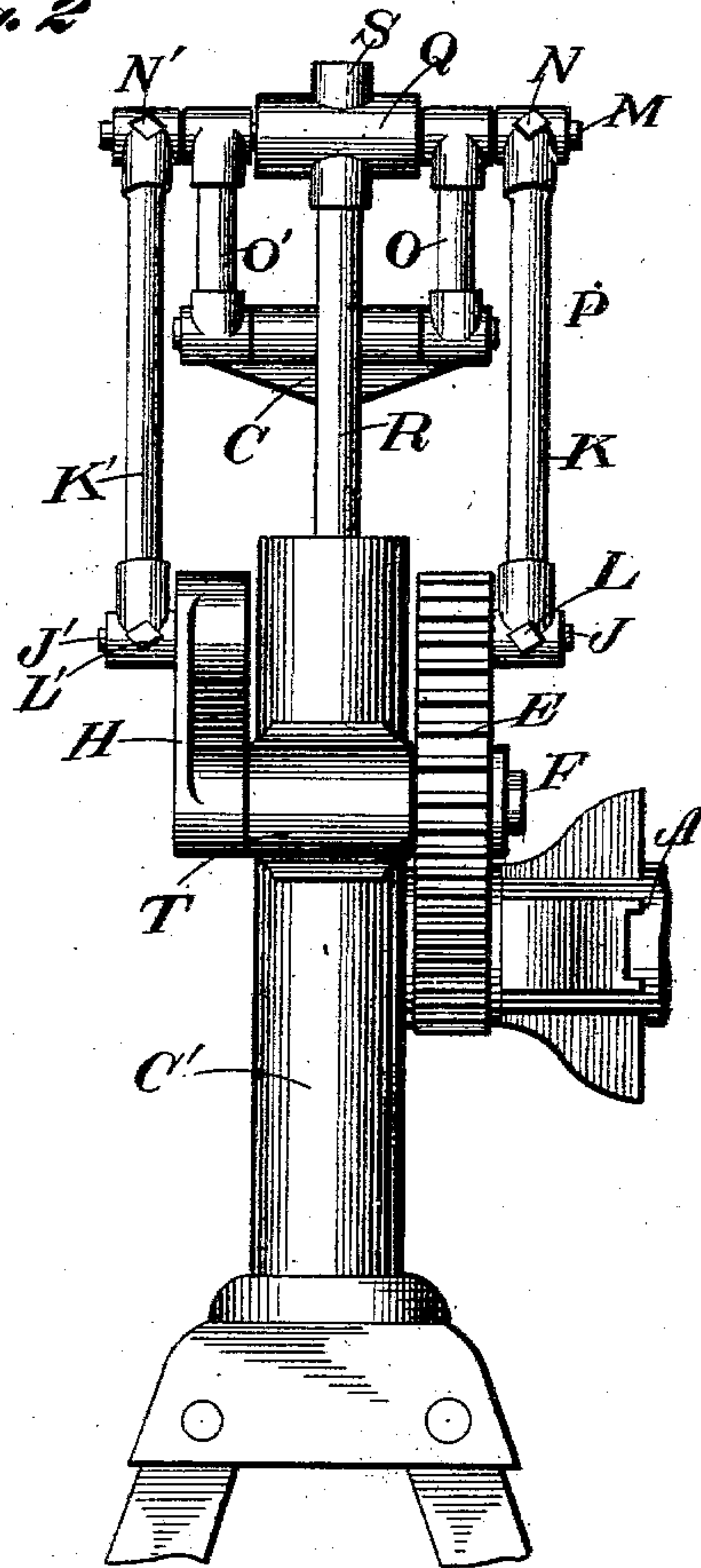


Fig. 3

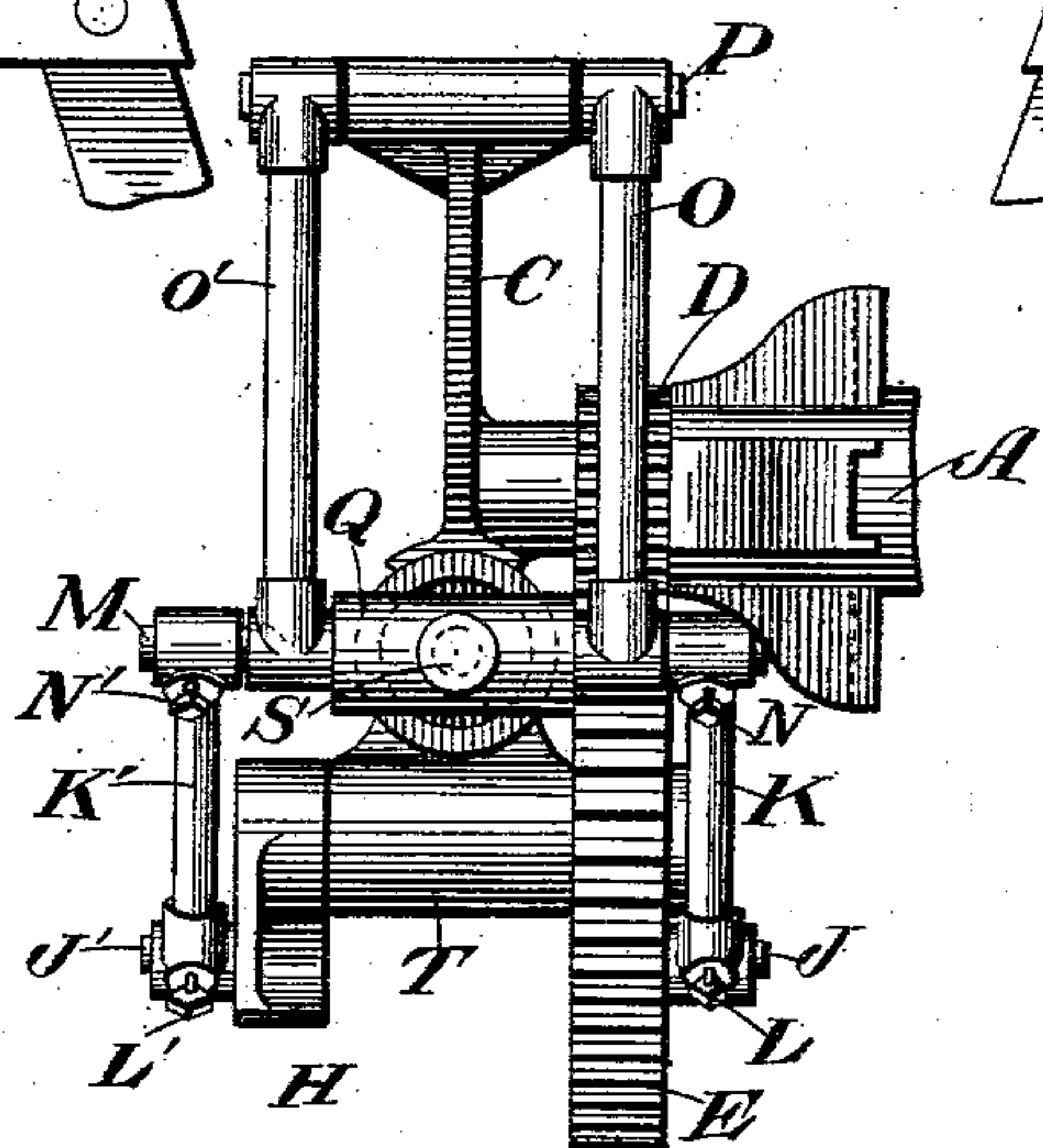
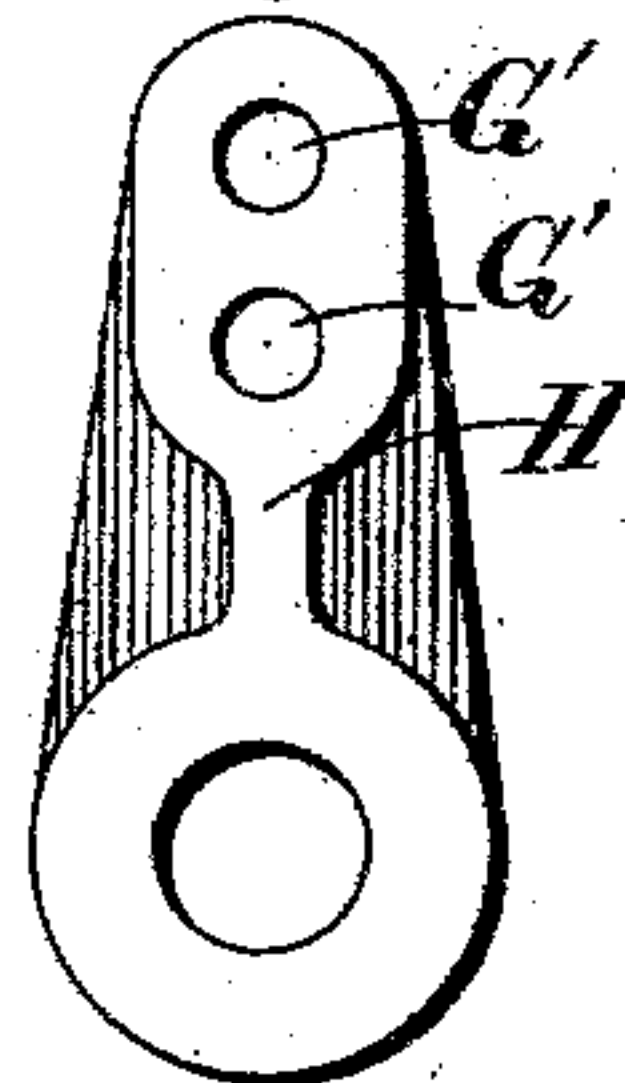


Fig. 4



WITNESSES
C. Edward Duffey
James R. Mansfield

INVENTOR
James Alston
By
Alexander F. Howell
Attorneys.

UNITED STATES PATENT OFFICE.

JAMES ALSTON, OF SOUTH MELBOURNE, VICTORIA, AUSTRALIA.

MOTION-CHANGING GEAR FOR WINDMILLS.

SPECIFICATION forming part of Letters Patent No. 741,005, dated October 13, 1903.

Application filed March 30, 1903. Serial No. 150,310. (No model.)

To all whom it may concern:

Be it known that I, JAMES ALSTON, a subject of the King of Great Britain and Ireland, residing at Maffra street, South Melbourne, in the county of Bourke, State of Victoria, Commonwealth of Australia, have invented certain new and useful Improvements in Motion-Changing Gear for Windmills, of which the following is a specification.

My invention relates to that class of windmill in which the wind-wheel by motion-change gear changes the rotary motion of the wind-wheel to a vertical reciprocating pump-rod.

Referring to the drawings which form a part of this specification, Figure 1 is a front elevation of the mechanism with the wind-wheel removed. Fig. 2 is a side view of Fig. 1. Fig. 3 is a top plan view thereof, and Fig. 4 a detail view of the crank detached.

Similar letters of reference indicate similar or corresponding parts where they occur in the several views.

On reference to the drawings it will be seen that A is the wind-wheel sleeve, which turns upon the outer end of the shaft B, the inner end of which is connected to and supported by a portion of the frame C. Through the standard-frame C is a vertical passage-way or hole.

On the inner end of the sleeve A is a toothed pinion D. This gears into the toothed wheel E, secured to the overhanging end of the counter-shaft F. In the toothed wheel E for the adjustment of the stroke of the pump-rod (hereinafter described) are two or more crank-pin holes G, radially arranged.

The intermediate portion of the shaft F rotates in a bearing T, integral with or detachable from the standard C' of frame C. The other end of the said shaft overhangs, and to the overhanging portion is secured the crank-arm H. The said crank-arm H is so secured to the shaft F that the crank-pin holes G', radially arranged therein, are in alinement with crank-pin holes G in the toothed wheel E and correspond in number therewith. Into the crank-pin holes G and G' are placed the inner ends of crank-pins J and J', respectively.

At their outer ends these pins enter the lower ends of connecting-rods K and K'. They are preferably locked into the connecting-rods by

the locking-screws L and L'. The upper ends of the said connecting-rods K and K' have holes therein which pass over the outer ends of the cross-shaft M. Each of the said connecting-rods is preferably secured to the said cross-shaft by locking-screws N and N', respectively. Between the two connecting-rods aforesaid and pivoted to the said cross-shaft M are the traveling ends of guide-rods O and O'. These at their other ends are pivoted to a cross-pin P, secured to an extension of the frame C, and act in the same manner toward the cross-shaft M as a guide thereto. Between the two guide-rods aforesaid and also surrounding the said cross-shaft M is a sleeve Q. To this sleeve is secured the upper end R of the pump-rod. Above this is situated a lubricator-box S, from which oil is conducted to the said sleeve and to the guide-rods.

Operation: The rotation of wheel-sleeve A imparts rotary motion through gears D E to shaft F, and the connecting-rods K K', respectively connected to crank-gear E and crank-arm H, impart a vertical reciprocating movement to pump-rod R. The extent of this reciprocating movement or stroke of rod R may be varied by connecting rods K K' in different holes in crank-arm H and gear E. If connected in the outermost holes, the stroke of the rod will be greater, and in an inner hole the stroke of the rod will be less, as is obvious. The guide-rods O O' prevent the thrust or pull of the connecting-rods abnormally deflecting the pump-rod and keep the rod steady and true in its movements, doing away with any necessity for packings or sliding guides for the rod R in part C'. By having the connecting-rods and guides in pairs, as shown and described, lateral deflection thereof is prevented and altogether a very accurate easy-running windmill-gearing is provided.

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

1. In combination, a crank-shaft, opposite cranks thereon, a pump-rod, and pitmen connecting said cranks with said rod, the connections between the pitmen and cranks being adjustable toward and from the shaft.

2. In combination, a crank-shaft, opposite cranks thereon, a pump-rod, and pitmen con-

necting said cranks with said rod, the connections between the pitmen and cranks being adjustable toward and from the shaft; with guide-rods pivoted at one end to the
5 frame opposite the pitmen, and at the other ends to the connecting-rod adjacent to the pitmen, substantially as described.

3. In a windmill-gearing, a reciprocating pump-rod, a counter-shaft, adjacent cranks
10 on said shaft, connecting-rods connecting said cranks with the pump-rod; and guide-rods pivoted to the frame opposite the connecting-rods and connected with the pump-rod adjacent to the connecting-rods, substantially as described.
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4. In a windmill-gearing, a shaft geared to the wheel, a crank-wheel and a crank on said shaft, a pump-rod, a member connected to the upper end thereof, connecting-rods respectively connected to the cranks and to
20 said member at opposite sides of the pump-rod, and parallel guide-rods, pivoted at one end to the frame at the side opposite the con-

necting-rods and connected at their other ends to said member, substantially as described. 25

5. In combination, a shaft, a crank-gear thereon, a crank on the other end of said shaft, a pump-rod, a transverse sleeve attached thereto above the crank-shaft, a pair of parallel connecting-rods connected at their
30 lower ends to the crank-gear and crank respectively, and at their upper ends to opposite ends of said sleeve, guide-rods connected at their upper ends to opposite ends of said sleeve, and at their lower ends to a fixed part
35 of the frame, said guide-rods being at the side of the frame opposite the connecting-rods, all substantially as and for the purpose described.

In witness whereof I have hereunto set my
40 hand to this specification in the presence of two witnesses.

JAMES ALSTON.

Witnesses:

EDWIN PHILLIPS,

CECIL W. LE PLASTRIER.