

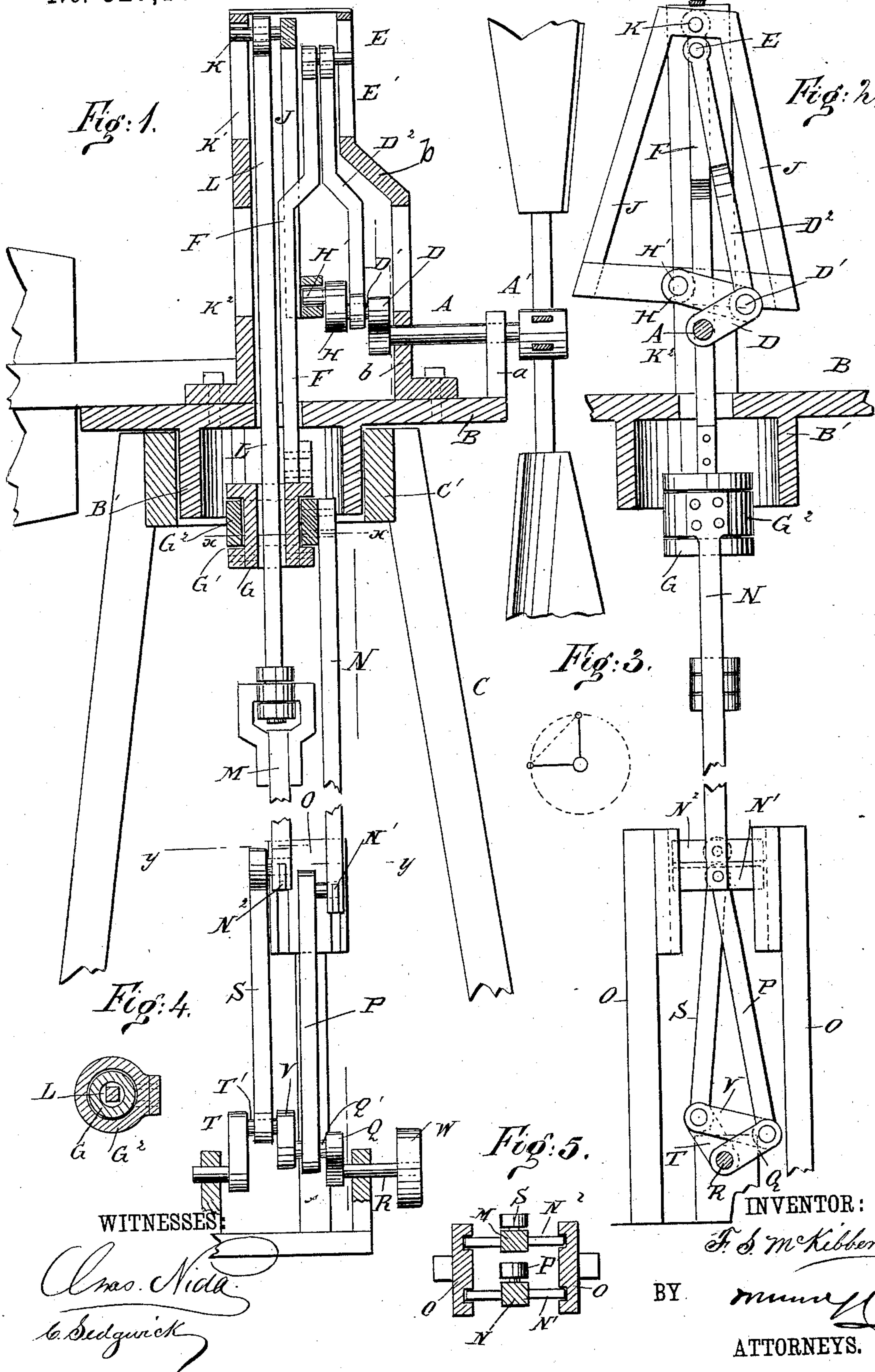
(No Model.)

F. S. McKIBBEN.

WIND MOTOR.

No. 327,186.

Patented Sept. 29, 1885.





# UNITED STATES PATENT OFFICE.

FRANK S. McKIBBEN, OF TACOMA, WASHINGTON TERRITORY.

## WIND-MOTOR.

SPECIFICATION forming part of Letters Patent No. 327,186, dated September 29, 1885.

Application filed August 7, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK S. McKIBBEN, of Tacoma, in the county of Pierce, Washington Territory, have invented a new and Improved Wind-Motor, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved wind-motor of simple form.

The invention consists of the combinations of parts and their construction, substantially as hereinafter fully set forth, and 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.

Figure 1 is a sectional elevation of my improved motor. Fig. 2 is a sectional elevation of the same at a right angle to Fig. 1. Fig. 3 shows the arrangement of the cranks. Fig. 4 is a sectional plan view on the line  $xx$ , Fig. 1. Fig. 5 is a sectional plan view on the line  $yy$ , Fig. 1.

The shaft A, on the outer end of which the wind-wheel A' is mounted, is journaled in standards  $a$   $b$  on a platform, B, provided with a downwardly-projecting neck or hollow hub, B', which projects into a ring, C', formed on the upper end of an upright frame, C.

On the inner end of the shaft A a crank, D, is mounted, the crank-pin D' of which is connected by a connecting-rod, D<sup>2</sup>, with a pin, E, adapted to slide vertically in a slot, E', in the standard  $b$ . On the pin E is also pivoted a connecting-rod, F, the lower end of which is connected with a vertically-sliding collar, G, having an annular groove, G', in its outer surface.

On the outer end of the crank-pin D' a crank, H, is formed, the crank-pin H' of which passes into an aperture in the bottom cross-piece of a frame, J, in the top of which a pin, K, is held, which passes through a vertical guide-slot, K', in a standard, K<sup>2</sup>, on the platform B. On the said pin K is also pivoted a connecting-rod, L, which passes through the collar G, and to the lower end of which is swiveled a rod, M.

A ring, G<sup>2</sup>, held in the annular groove G' of the collar G, is secured to a downwardly-ex-

tending rod, N, having its lower end connected with a cross-head, N', sliding between two vertical guides, O, to which cross-head is pivoted a connecting-rod, P, the lower end of which is pivoted on the pin Q' of a crank, Q, on a shaft, R.

The lower end of the rod M is connected with a cross-head, N<sup>2</sup>, also sliding between the uprights O, which is connected by a rod, S, with the crank-pin T' of a crank, T, on the shaft R. The cranks T and Q are at right angles to each other, and the adjoining ends of their crank-pins T' and Q' are connected by a cross-piece, V.

A pulley, W, for receiving the belt for transmitting the power, is mounted on the end of the shaft R.

Power is transmitted from the shaft A through the crank D, the crank-pin D', the connecting-rod D<sup>2</sup>, the pin E, the rod F, the collar G, the rod N, the cross-head N', the connecting-rod P, the crank-pin Q', and the crank Q to the shaft R, and part of the power is also transmitted from the shaft A to the crank D, the crank-pin D', the crank H, the crank-pin H' to the frame J, the pin K, the connecting-rod L, the rod M, the cross-head N<sup>2</sup>, the connecting-rod S, the crank-pin T', and to the shaft R.

In the drawings I have shown a sectional wheel. If a solid wheel is used, the construction will need to be modified somewhat. I do not limit myself to the details of construction shown.

By the above-described arrangement dead-centers are avoided, and by arranging the rods for transmitting the motion in the manner shown and described the motion will always be transmitted vertically, and the top platform, B, can revolve freely with the wind without affecting any of the devices for transmitting the motion.

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

1. In a wind-motor, the combination, with an upright structure, of a revolving platform on the same, a shaft journaled on the platform and provided with two cranks at right angles to each other, a wind-wheel on the shaft, connecting-rods connecting the two



cranks with vertically-sliding pins, said pins being guided in slots of the upright structure above the wheel-shaft, connecting-rods connecting the said pins with vertically-sliding cross-heads, and connecting-rods for connecting the cross-heads with cranks on the receiving-shaft, substantially as herein shown and described.

2. In a wind-motor, the combination, with an upright structure, of a revolving platform on the same, a shaft journaled on the platform and provided with two cranks, D H, at right angles to each other, a wind-wheel on the shaft, the connecting-rod D<sup>2</sup>, mounted on the crank-pin D' and provided at its upper end with a vertically-sliding pin, E, the connecting-rod F, extending from the pin E down to a collar, G, the rod N, secured to a ring surrounding the collar G and having its lower end connected by a connecting-rod, P, with a crank, Q, on the shaft R, the connecting rod or frame J, connecting the crank-pin H' with the vertically-sliding pin K, the connecting-rod L, extending from the pin K through the collar G, the connecting-rod M, connected by

a swivel-joint with the rod L, the connecting-rod S, connecting the lower end of the rod M with the cranks V and Q on the shaft R, guideways E K', substantially as herein shown and described.

3. In a wind-motor, the combination, with the structure C, of the revolving platform B, the shaft A, the wind-wheel A', mounted on the same, the cranks D H on the shaft A, the connecting-rod D<sup>2</sup>, the pin E, the connecting-rod F, the collar G, the connecting-rod N, the vertically-sliding cross-head N', the connecting-rod P, the crank Q on the shaft R, the connecting rod or frame J, connecting the crank-pin H' with the vertically-sliding pin K, the connecting rod L, connected by a swivel-joint with the rod M and passing through the collar G, the sliding cross-head N<sup>2</sup>, the connecting-rod S, and the cranks V and Q on the shaft R, guideways E K', substantially as herein shown and described.

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Witnesses:

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