(No Model.)

J. HOFFMAN & H. F. TURNER.

WIND MOTOR.

No. 477,544. Patented June 21, 1892.

Fig. 1.

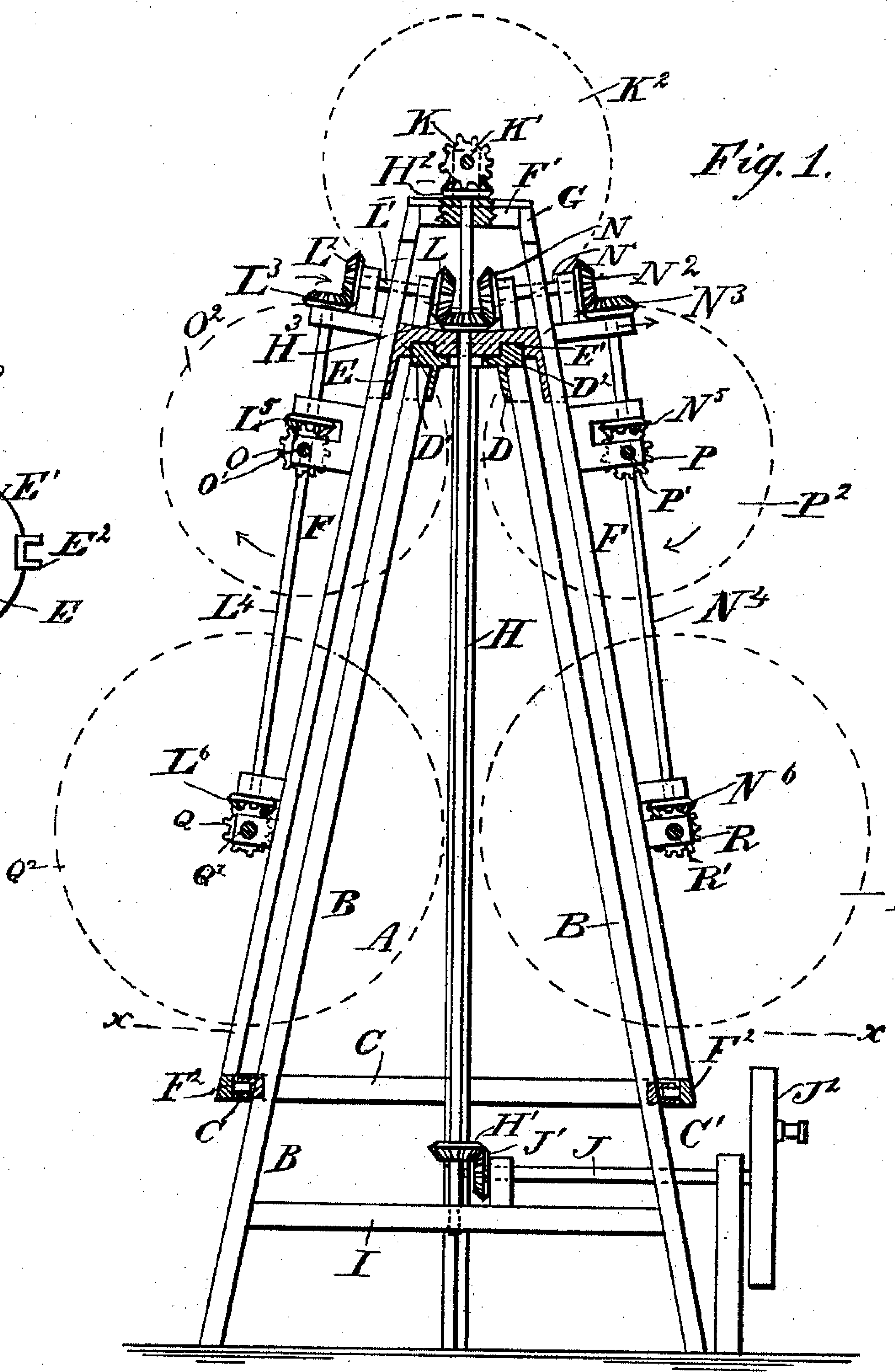


Fig. 3

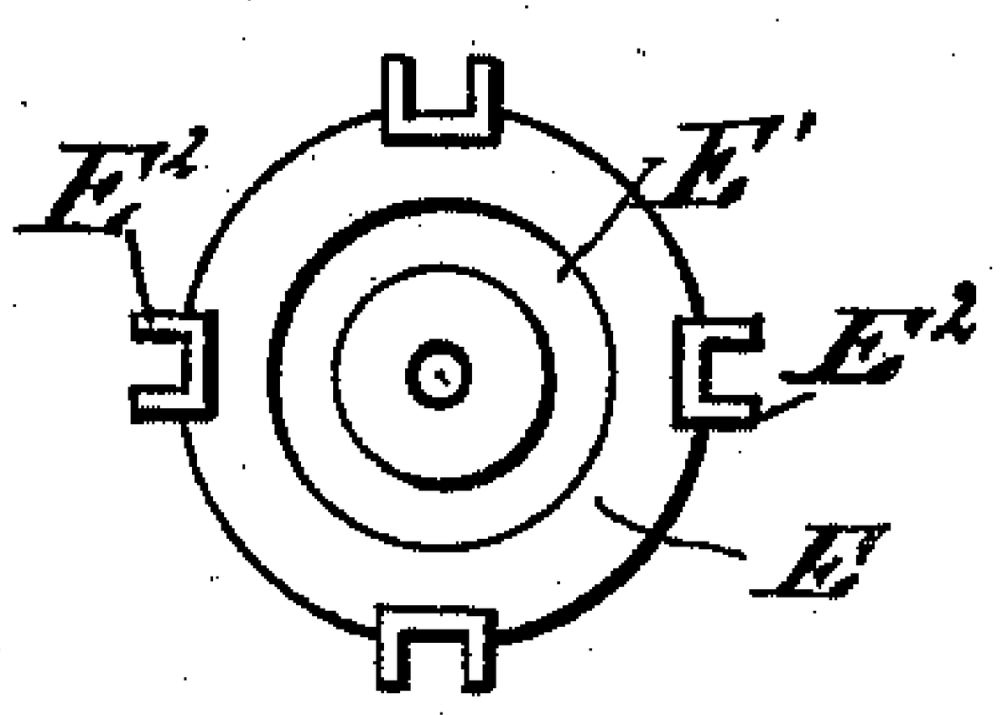


Fig. 4

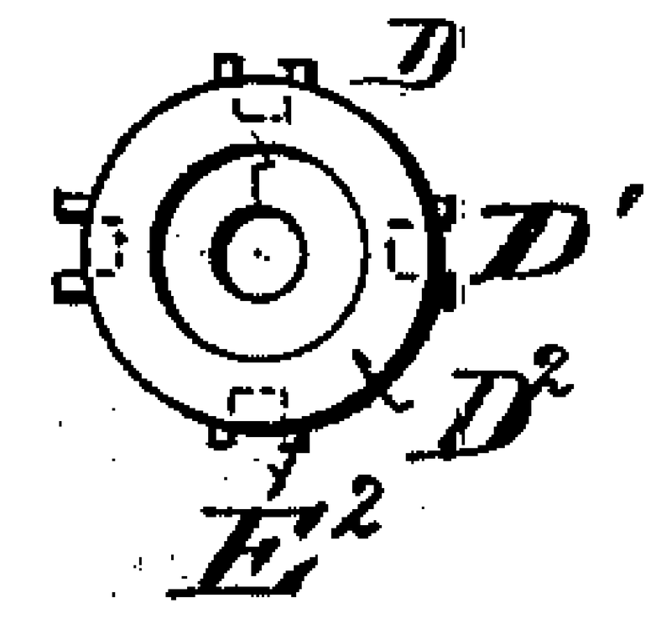
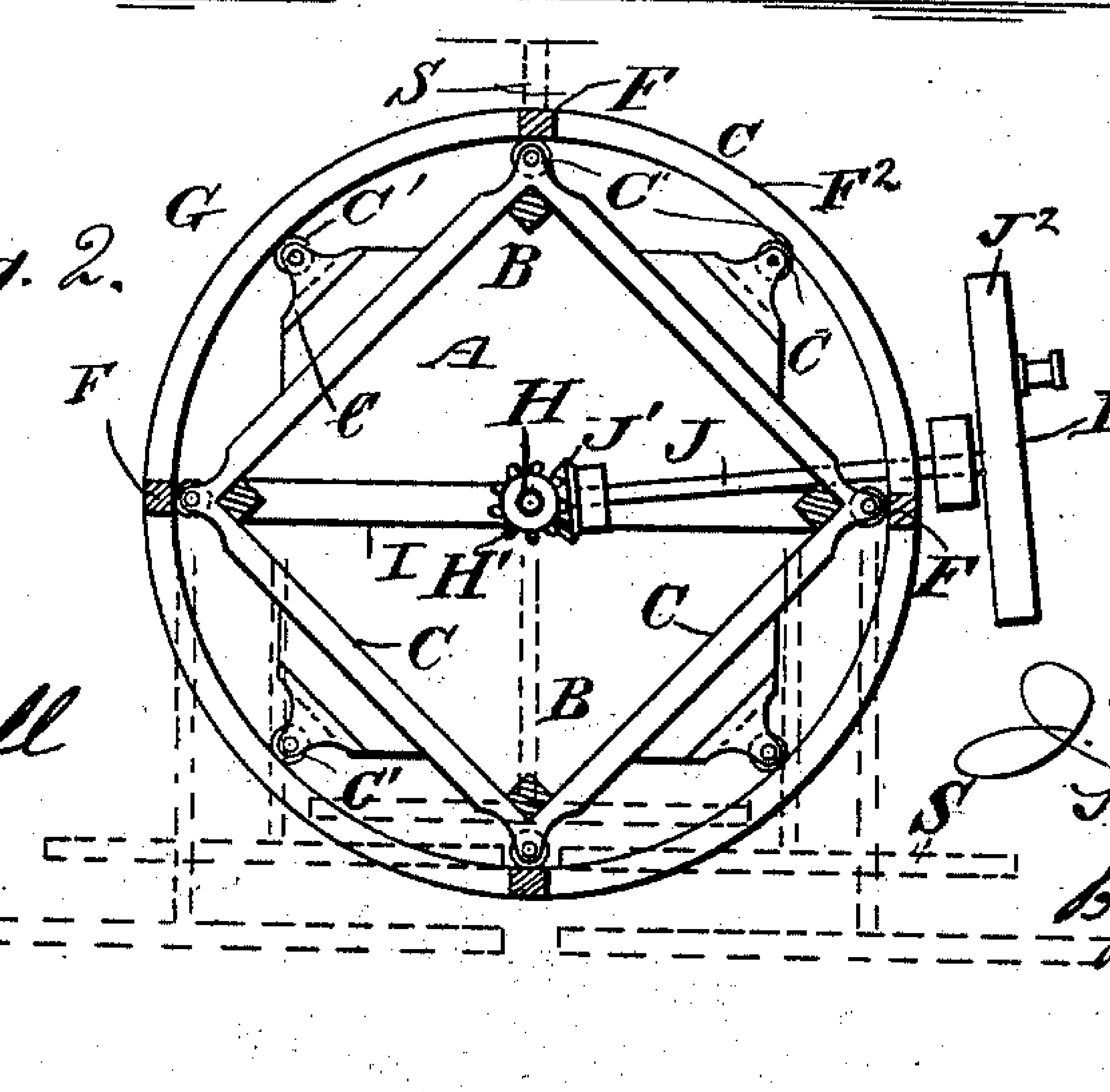


Fig. 2.



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JOHN HOFFMAN AND HARVEY F. TURNER, OF OAKLEY, KANSAS.

WIND-MOTOR.

SPECIFICATION forming part of Letters Patent No. 477,544, dated June 21, 1892.

Application filed April 14, 1891. Serial No. 388,840. (No model.)

To all whom it may concern:

Be it known that we, JOHN HOFFMAN and HARVEY F. TURNER, both of Oakley, in the county of Logan and State of Kansas, have invented a new and Improved Wind-Motor, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved wind-motor which is simple and durable in construction, very effective and powerful in operation, and arranged to transmit the force of a series of wind-wheels to a common shaft.

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

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

Figure 1 is a side elevation of the improvement with parts in section. Fig. 2 is a sectional plan view of the same on the line *x x* of Fig. 1. Fig. 3 is an inverted plan view of the turn-table, and Fig. 4 is a plan view of the bearing for the turn-table.

The improved wind-motor is provided with a suitably-constructed tower A, provided with posts B, set in the ground and inclined toward each other, as is plainly illustrated in Fig. 1. The posts B are connected with each other near the ground by braces C, and the upper ends of the said posts are engaged by ears D, formed on the under side of a bearing-plate D′, provided on its top with an annular offset D^2, fitting into a corresponding annular recess E′, formed in the under side of the turn-table E, as is plainly shown in Fig. 1.

On the periphery of the turn-table E are formed ears or lugs E^2, engaging posts F of a frame G, mounted to revolve on the outside of the tower A. The upper ends of the posts F of the frame G are connected with each other by a plate F′, and the lower ends of the said posts carry a ring F^2, mounted to turn on its inside on friction-rollers C′, arranged in a circle and supported on the braces C of the tower A. (See Fig. 2.)

In the center of the plate F′ and in the center of the turn-table E is mounted a shaft H, which extends vertically in the center of the tower A. The lower end of the shaft H is set in a suitable step I, and near this lower end of the shaft is secured a bevel gear-wheel H′, meshing into a bevel gear-wheel J′, secured on a main driving-shaft J, mounted to turn in suitable bearings on the tower and carrying at its outer end a belt or crank-wheel J^2 for transmitting the motion of the main driving-shaft to other machinery. On the upper end of the shaft H, above the plate F′, is secured a bevel gear-wheel H^2, meshing into a bevel gear-wheel K, secured on a shaft K′, mounted to turn in suitable bearings on the plate F′ and carrying at one outer end a wind-wheel K^2. On the shaft H, above the turn-table E, is secured a bevel gear-wheel H^3, meshing at opposite sides into bevel gear-wheels L and N, secured at the inner ends of shafts L′ and N′, respectively mounted to turn in suitable bearings on the frame G. On the outer ends of the shafts L′ and N′ are secured the bevel gear-wheels L^2 and N^2, respectively in mesh with the bevel gear-wheels L^3 and N^3, respectively secured on the upper ends of the shafts L^4 and N^4, respectively mounted to turn in suitable bearings secured onto oppositely-arranged posts F of the frame G. On the shafts L^4 and N^4 are secured the bevel gear-wheels L^5 and N^5, respectively in mesh with the bevel gear-wheels O and P, respectively secured on shafts O′ and P′, respectively mounted to turn in suitable bearings arranged on the posts of the frame G and extending horizontally parallel with the shaft K′, previously mentioned. On the shafts O′ and P′ are secured the wind-wheels O^2 and P^2, respectively, similar to the wind-wheel K^2 and extending in the same direction. On the lower ends of the shafts L^4 and N^4 are secured the bevel gear-wheels L^6 and N^6, respectively in mesh with the bevel gear-wheels Q and R, respectively secured on the shafts Q′ and R′, respectively mounted to turn in suitable bearings on the posts of the frame G and extending horizontally parallel to the shafts O′ P′ K′. On the shafts Q′ and R′ are secured the wind-wheels Q^2 and R^2, presenting the same face to the wind as the wind-wheels O^2 P^2 K^2, previously mentioned.

On the revolving frame G is arranged a suitable vane S, (shown partly in dotted lines in Fig. 2,) so that the said frame is turned

into the proper position to present the wind-wheels K^2 O^2 P^2 Q^2 R^2 to the wind.

The operation is as follows: The wind acting on the vane S revolves the frame G on the tower A, so that the faces of the wind-wheels are acted on by the wind, whereby the wind-wheels are turned and by their connection with the shaft H impart a powerful rotary motion to the latter. The shaft H, by being geared with the main driving-shaft J, imparts a rotary motion to the latter, so that the heavy machinery can be actuated by suitable means from the said shaft J. It will thus be seen that the combined force of the several wind-wheels is transmitted to the main driving-shaft, and consequently to the machinery to be driven.

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

1. A windmill comprising a tower, a vertical central shaft therein, a turn-table on the top of the tower and connected with said shaft, a rotary frame depending from the turn-table and inclosing the tower, the frame having a ring on its lower end traveling about a circular track on the lower portion of the tower, upper and lower horizontal wind-wheel shafts journaled on said rotary frame, and vertically-extending shafts geared to the horizontal shafts and in turn geared to the central vertical shaft, substantially as set forth.

2. A windmill consisting in a tower A, formed of posts B, connected at their upper converging ends by the plate D′, a rotary frame G, inclosing the tower and having a turn-table near its upper end turning on plate D′, a plate F′ on top of the frame G, a ring F^2 on the lower end of the frame G, a circular track on the lower part of the tower for said ring and formed of anti-friction rollers C′, central vertical shaft H, extending down through plate F′ and the turn-table to the bottom of the tower, an upper wind-wheel shaft geared to shaft H, horizontal wind-wheel shafts on the rotary frame, and vertically-extending shafts L^4 N^4, connecting said horizontal shafts and geared to the shaft H between the turn-table and plate F′, substantially as set forth.

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