(No Model.) 2 Sheets—Sheet 1.

J. E. SWANSON.

WIND MOTOR AND POWER TRANSMITTER.

No. 594,442. Patented Nov. 30, 1897.

Fig. 1

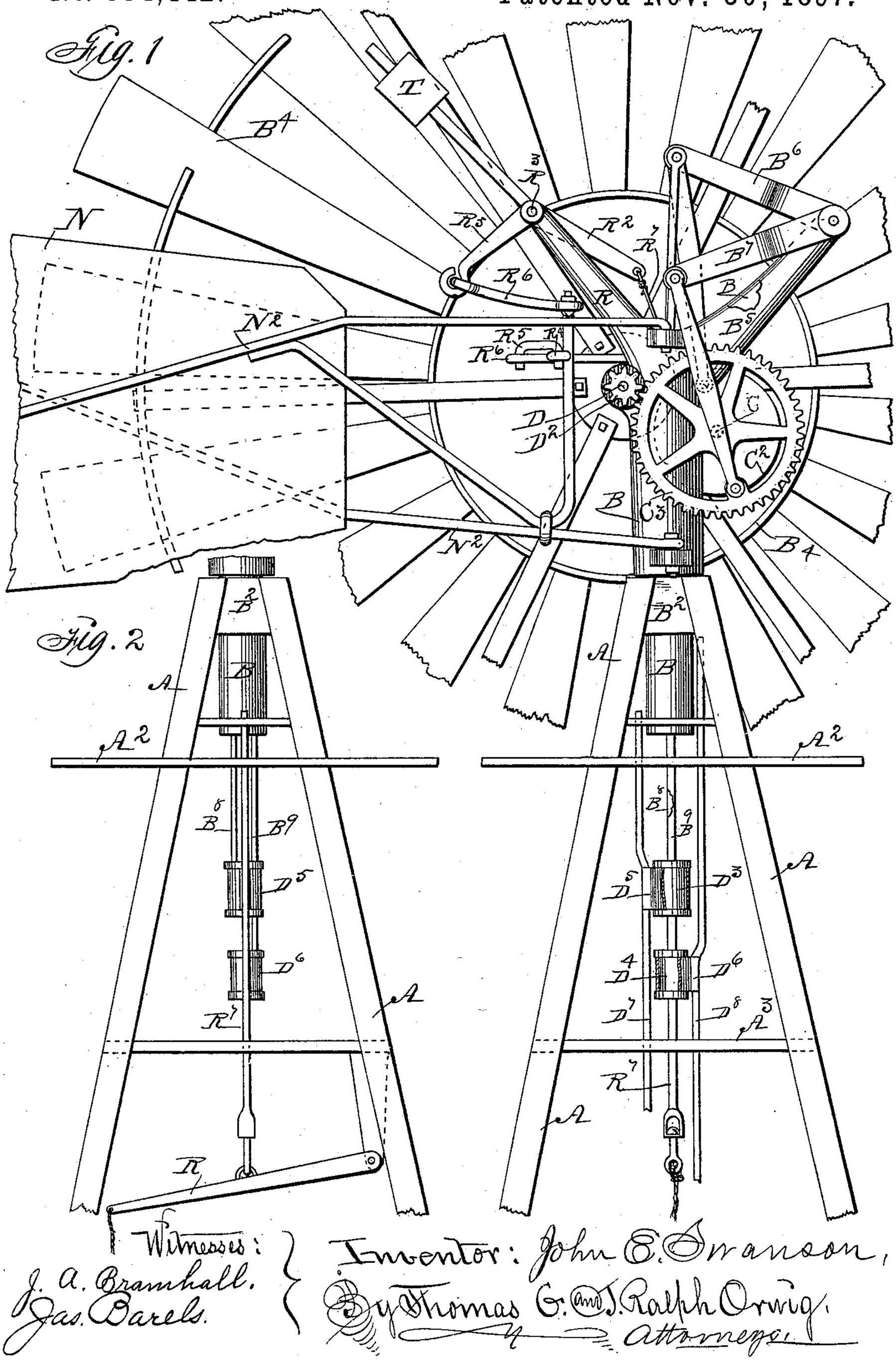

Fig. 2

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(No Model.) 2 Sheets—Sheet 2.

J. E. SWANSON.

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Fig. 3

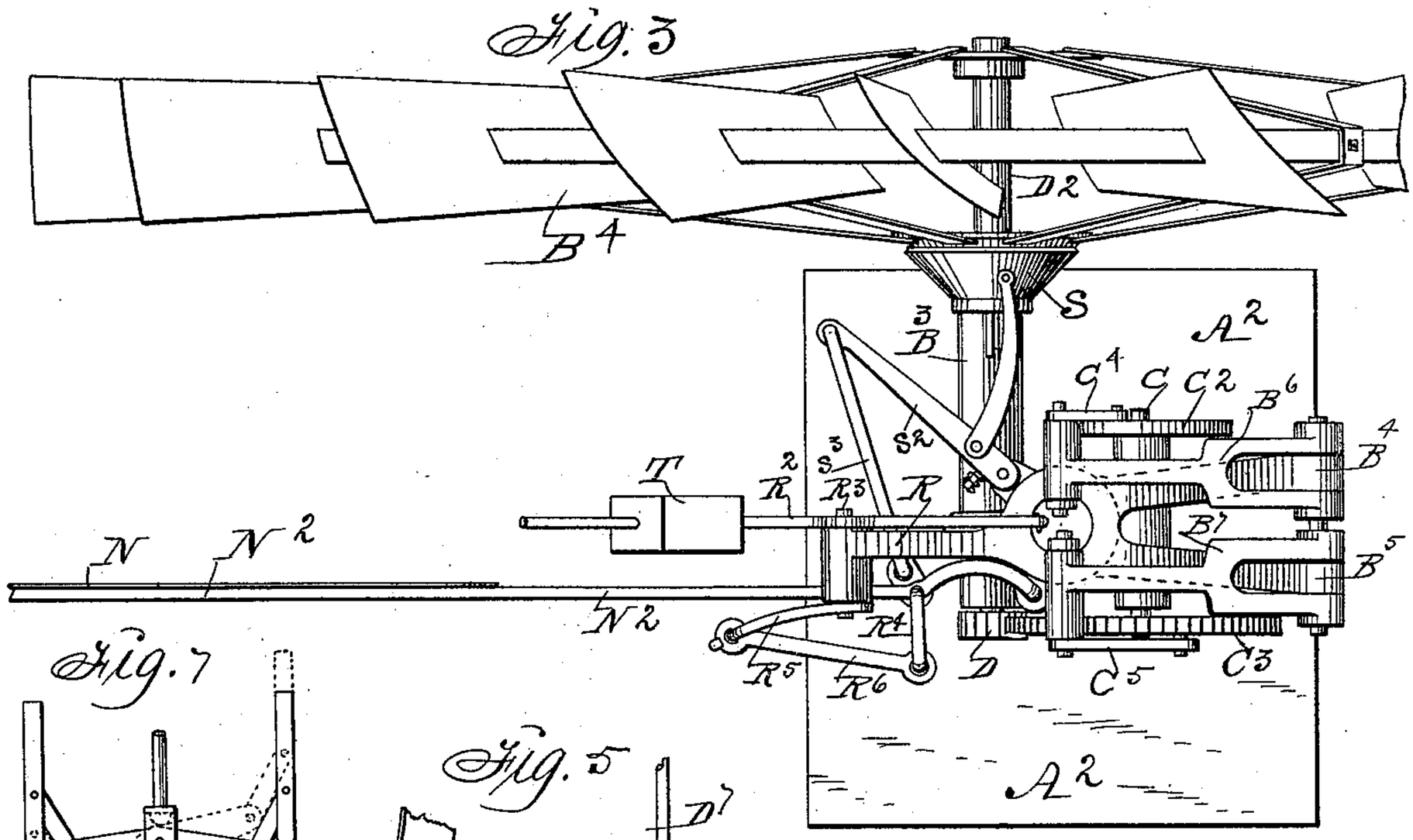


Fig. 7

Fig. 5

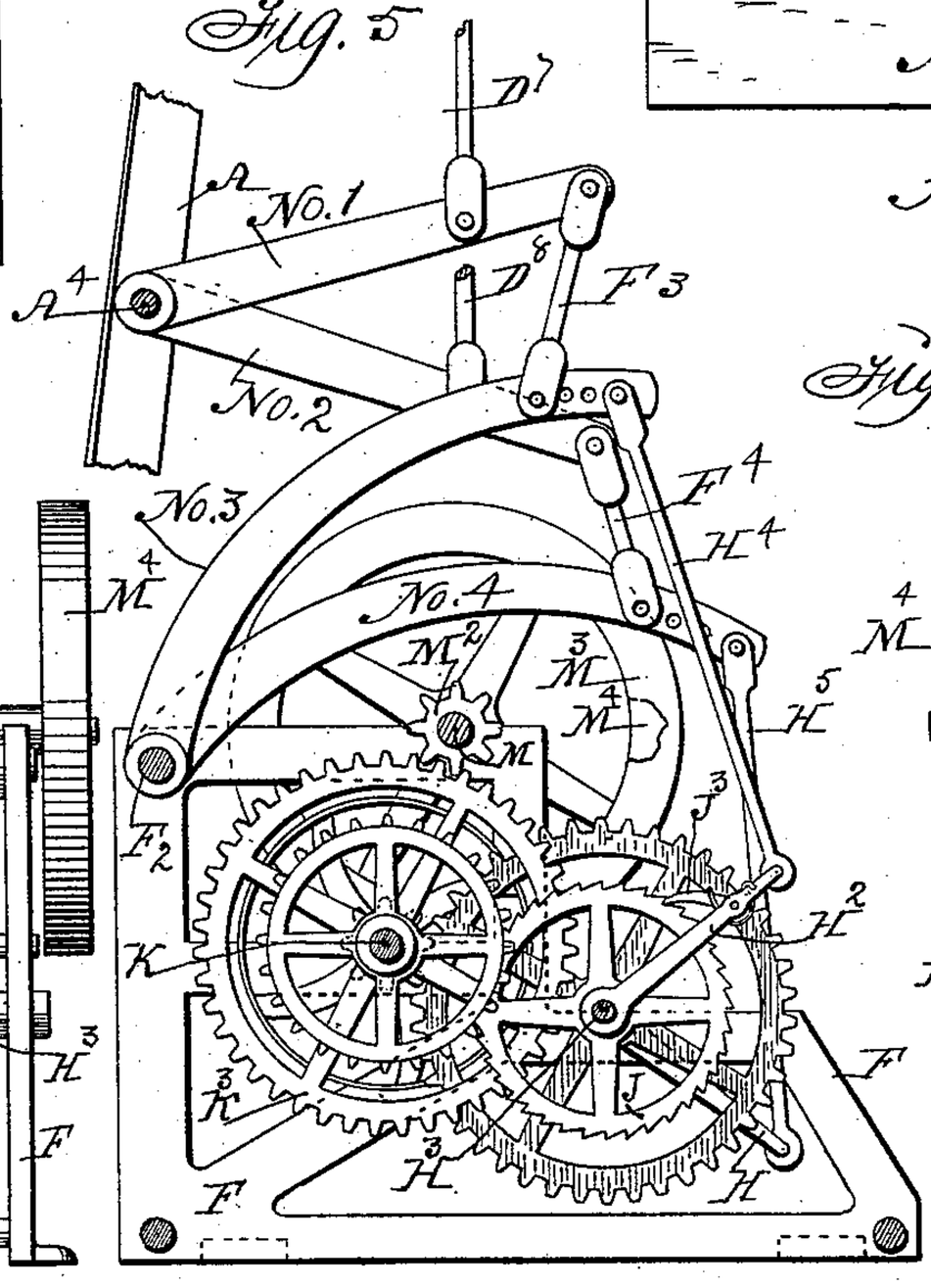


Fig. 4

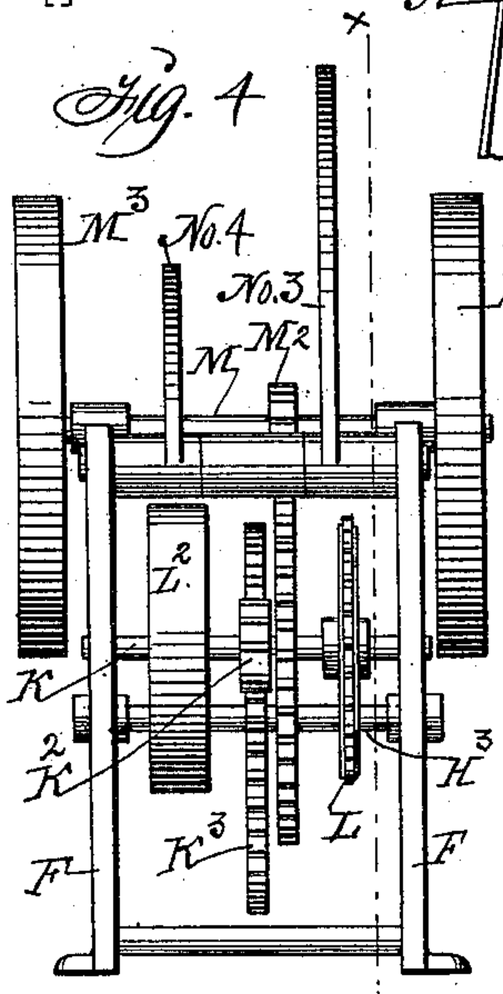
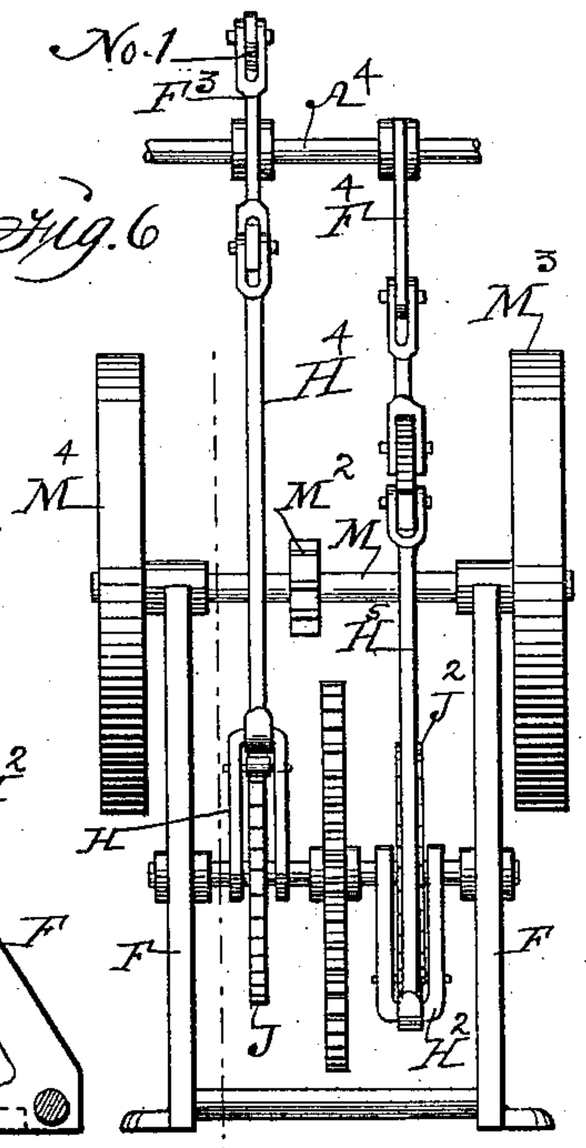


Fig. 6



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UNITED STATES PATENT OFFICE.

JOHN E. SWANSON, OF STRATFORD, IOWA.

WIND-MOTOR AND POWER-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 594,442, dated November 30, 1897.

Application filed May 10, 1897. Serial No. 635,962. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. SWANSON, a citizen of Sweden, residing at Stratford, in the county of Hamilton and State of Iowa, have invented a new and useful Wind-Motor and Power-Transmitter, of which the following is a specification.

My object is to provide a wind-motor and power-transmitter adapted for advantageously operating pumps, mills, and other extraneous machinery connected therewith by means of belts and pulleys or sprocket wheels and chains.

My invention consists in the construction, arrangement, and combination of operative elements with a stationary tower and wind-wheel, as hereinafter set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 shows the top portion of the wind-wheel support, a portion of a vane, and the power transmitting and regulating mechanisms connected with the wheel. Fig. 2 is a view of the lower portion of Fig. 1, taken at right angles thereto to show more clearly the position of the rod for adjusting the vane relative to the wind-wheel. Fig. 3 is a top view of the top portion of the tower and support of the wind-wheel and a portion of the wind-wheel, the vane, and operative mechanisms connected therewith. Fig. 4 is an end view of a portion of the motor mechanism for compounding, converting, and transmitting power from the wind-wheel to extraneous machinery. Fig. 5 is a view on the line $x\ x$ of Fig. 4 and some additional mechanism connected with the top portions thereof as required to connect the motor with the wind-wheel. Fig. 6 is a view from the end opposite that shown in Fig. 4. Fig. 7 shows a modified form of the mechanism for connecting compounding-levers with a wind-wheel.

The letter A designates the uprights, preferably angle-iron, of the frame or tower for supporting the wind-wheel and operative mechanism connected therewith.

A^2 and A^3 are platforms fixed to the frame at different points of elevation.

B is the tubular portion of a metal frame journaled in a fixed bearing B^2 at the top of the uprights A of the tower, and B^3 is a tubular arm or horizontal portion of the rotatable frame that carries the wind-wheel B^4, mounted on the free end of the arm B^3. B^4 and B^5 are parallel bearers formed integral with or fixed to the top of the rotatable post B to support links B^6 and B^7, pivoted thereto for actuating rods B^8 and B^9, pivotally connected with the ends of the links.

C is a duplex bearer formed on or fixed to the post B to support the shaft C of a crank-wheel C^2 at one end thereof and a gear-wheel C^3, journaled to the other end of the same shaft.

C^4 is a link that connects the wheel C^2 with the top end of the rod B^8, and C^5 is a link that connects the gear-wheel C^3 with the top of the rod B^9, so that the gear-wheel will perform the function of a crank-wheel in imparting a reciprocating vertical motion to the rods B^8 and B^9.

D is a pinion on the end of the axle D^2 of the wind-wheel B^4, that extends through the tubular arm B^3 of the rotating frame to transmit power and motion from the wind-wheel to the rods B^8 and B^9 by means of the intervening links and cranks.

D^3 and D^4 are tubular guides fixed to the lower ends of the reciprocating rods B^8 and B^9 and rotatably supported in bearings D^5 and D^6, fixed to reciprocating rods D^7 and D^8, as shown in Fig. 1, in such a manner that the rods B^8 and B^9 can rotate with the post B as the vane and wind-wheel are veered about. The lower ends of the rods D^7 and D^8 are pivotally connected with compounding-levers, as shown in Fig. 5, in such a manner that the power transmitted from the wind-wheel will alternately lift the rods D^7 and D^8 and the levers 1 and 2, and the power of the wheel thus applied and utilized without subjecting the said rods to downward-pushing motions and the flexion and damage incident to downward pressure applied to reciprocating rods.

F represents a frame adapted to support the mechanisms for converting the reciprocating rectilinear motions of the rods connected with the wind-wheel and transmitting power and motion to extraneous machinery.

1 and 2 are levers fulcrumed to a cross-piece or round bar A^4, that is fixed to the uprights A of the tower. The lower ends of the rods D^7 and D^8 are bifurcated and pivoted to the levers, as shown in Fig. 5.

3 and 4 are curved levers pivoted to a cross-piece or round bar F^2 of the frame F and adjustably connected with the free ends of the levers 1 and 2 by means of links F^3 and F^4, and also connected with arms H and H^2, that project in opposite directions from a rotatable shaft H^3, that is journaled in bearings formed in or fixed to the frame F by means of rods or bars H^4 and H^5, as required to rotate the shaft. The arms are pivotally connected with the shaft H^3.

J and J^2 are ratchet-wheels fixed to the shaft H, and J^4 and J^5 are pawls pivoted to the arms H and H^2 to engage the ratchet-wheels in such a manner that the inward motions of the arms will rotate the ratchet-wheels and shaft H to which they are fixed.

K is a shaft in parallel position with the shaft H in bearings fixed to the frame F, and K^2 is a pinion fixed on the shaft K to engage the gear-wheel K^3 on the shaft H, as required, to transmit power from the shaft H to the shaft K and also increase speed.

L is a sprocket-wheel and L^2 a belt-wheel on the shaft K for transmitting power and motion therefrom to a mill for grinding grain or other extraneous machinery.

M is a shaft in parallel position with the shaft K and in bearings fixed to the frame F and connected with the shaft K by means of a fixed pinion M^2, and M^3 and M^4 are balance-wheels on the ends of the shaft M.

N is a vane hinged to the rotating post B by means of the frame N^2, as shown in Fig. 1, or in any suitable way that will allow the frame and vane to swing horizontally and veer about as the direction of the wind changes and as required to adjust the wind-wheel B^4 to retain it operative when the wind blows.

R is a bearer projecting from the top of the rotatable post B, and R^2 is a lever fixed to a rock-shaft R^3 in the top of the lever and connected with an arm R^4, projecting from the frame N, by means of an arm R^5 on the end of the rock-shaft R^3 and a link R^6 in such a manner that the vane N will be moved horizontally by the vertical movement of the lever R^2.

R^7 is a flexible rod connected with the inner end of the lever R^2 and extended down through the tubular rotating post B and the tubular guides D^3 and D^4 and connected with a lever R^8, fulcrumed to the tower, as shown in Fig. 2, or in any suitable way so it can be operated by a person on the ground by means of a rope fastened to the end of the lever as required to fasten and unfasten the lever from a rack fixed to the frame A. A swivel at the lower portion of the rod R^7 allows the rod to turn with the post B.

S is a brake in the form of a cone-shaped collar fitted to the inner end of the hub of the wind-wheel B^4 and slidingly connected therewith. S^2 is a lever pivoted to the top of the post B and connected at its free end with the frame N^2 of the vane by means of a link S^3 and with the brake S by means of a link S^4 near the inner end of the lever, as shown in Fig. 3, in such a manner that when the lever R^2 is elevated and the vane thereby brought into parallel position with the wind-wheel the brake will retain the wind-wheel stationary.

T is a weight on the free end of the lever R^2 that in its normal position retains the lever in a depressed or downwardly-inclined position and the vane in a right-angled position relative to the wind-wheel.

In the practical operation of my invention when the wind-wheel is rotated the rods B^8 and B^9 will be reciprocated and their alternate upward motions will lift the guides D^3 and D^4 and the rods D^7 and D^8, connected therewith, by means of the bearers D^5 and D^6, as required to alternately lift the levers 1, 2, 3, and 4 to actuate the compounding, connecting, and transmitting mechanism mounted on the frame F.

It is obvious that the power of the wind-wheel is transmitted by the alternate upward motions of the rods B^8 and B^9 to the rods D^7 and D^8 and from thence to the cumulative levers 1, 2, 3, and 4 and then to the rotating shafts H^3 and K, as required, to be utilized for operating extraneous machinery connected with the shaft K of the motor by means of belt and pulleys or sprocket wheel and chain.

It is obvious that by duplicating the mechanism in the wind-wheel for simultaneously reciprocating the rods D^7 and D^8 and combining said rods with the power-accumulator all the power derived from the wind-motor is transmitted by the upward-pulling strokes of the rods, and that consequently the rods are not subjected to the flexion and strain incident to transmitting power by downward-pushing strokes, a desideratum that is very important in the practical operation of the complete invention.

I claim as my invention—

1. In a wind-motor, a tubular rotating post having an arm extending horizontally from its top portion, and shaft-bearers extending vertically to support a shaft in a horizontal position, an axle supported in said arm to revolve vertically and rotate with the post and arm horizontally, a pinion on the inner end of said axle and a wind-wheel on the outer end, two reciprocating rods extending up through the rotating post, two parallel bearers projecting outward and upward from the top of said post and connected with the top ends of said rods, links for making said connections, a rotating shaft extending horizontally in bearings at the top of said post and having a crank at one end connected with the top of one of the reciprocating rods by means of a link, a link for said purpose, a gear-wheel on the other end of the shaft in engagement with the pinion on the end of the wind-wheel axle and connected with the top of one of the said rods by means of a link, a link and a wind-wheel arranged and combined to reciprocate

the two parallel rods connected with said wind-wheel carried on said rotating post, two reciprocating rods, two vertically-vibrating levers at their lower ends and rotatably connected with the lower ends of the two rods connected with said wind-wheel at the top of the post, all arranged and combined to operate in the manner set forth for the purposes stated.

2. In a wind-motor, a power-transmitter comprising a suitable frame, a rotating shaft having a fixed gear-wheel and two fixed ratchet-wheels, a parallel shaft having a fixed pinion in engagement with said gear-wheel, means for transmitting motion from said second shaft to extraneous machinery, two arms pivotally connected with the shaft having fixed ratchet-wheels, pawls carried by said arms to engage the ratchet-wheels, two parallel vertically-vibrating levers connected with said arms by means of links, links for making such connections, a support for a wind-wheel, two vertically-vibrating levers fulcrumed to said support and connected with the aforesaid levers and two reciprocating rods operated by a wind-wheel, and a vertically-rotating wind-wheel and a wind-wheel support, all arranged and combined for the purposes stated.

3. A wind-motor comprising a tubular rotating post having an arm extending horizontally from its top portion, an axle supported in said arm to revolve vertically and rotate with the post and arm horizontally, a pinion on the inner end of said axle and a wind-wheel on the outer end, two reciprocating rods extending up through the rotating post, two parallel bearers projecting outward and upward from the top of said post and connected with the top ends of said rods by means of links, links for making such connections, a rotating shaft extending horizontally in bearings at the top of said post and having a crank at one end connected with the top of one of the reciprocating rods by means of a link, a link for making such connection, a gear-wheel on the other end of the shaft in engagement with the pinion in the end of the wind-wheel shaft, and connected with a wind-wheel at the top of the post, a power-cumulator comprising a suitable frame, a rotating shaft having a fixed gear-wheel and two fixed ratchet-wheels, a parallel shaft having a fixed pinion in engagement with said gear-wheel, means for transmitting motion from said second shaft to extraneous machinery, two arms pivotally connected with the shaft having fixed ratchet-wheels, pawls carried by said arms to engage the ratchet-wheels, two parallel vertically-vibrating levers connected with said arms by means of links, links for making such connections arranged and combined upon said frame, a support for a wind-wheel frame and two vertically-vibrating levers fulcrumed to said support and connected with the aforesaid levers, links for making such connections, and two reciprocating rods operated by a wind-wheel, and a vertically-rotating wind-wheel, all arranged and combined for the purposes stated.

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