

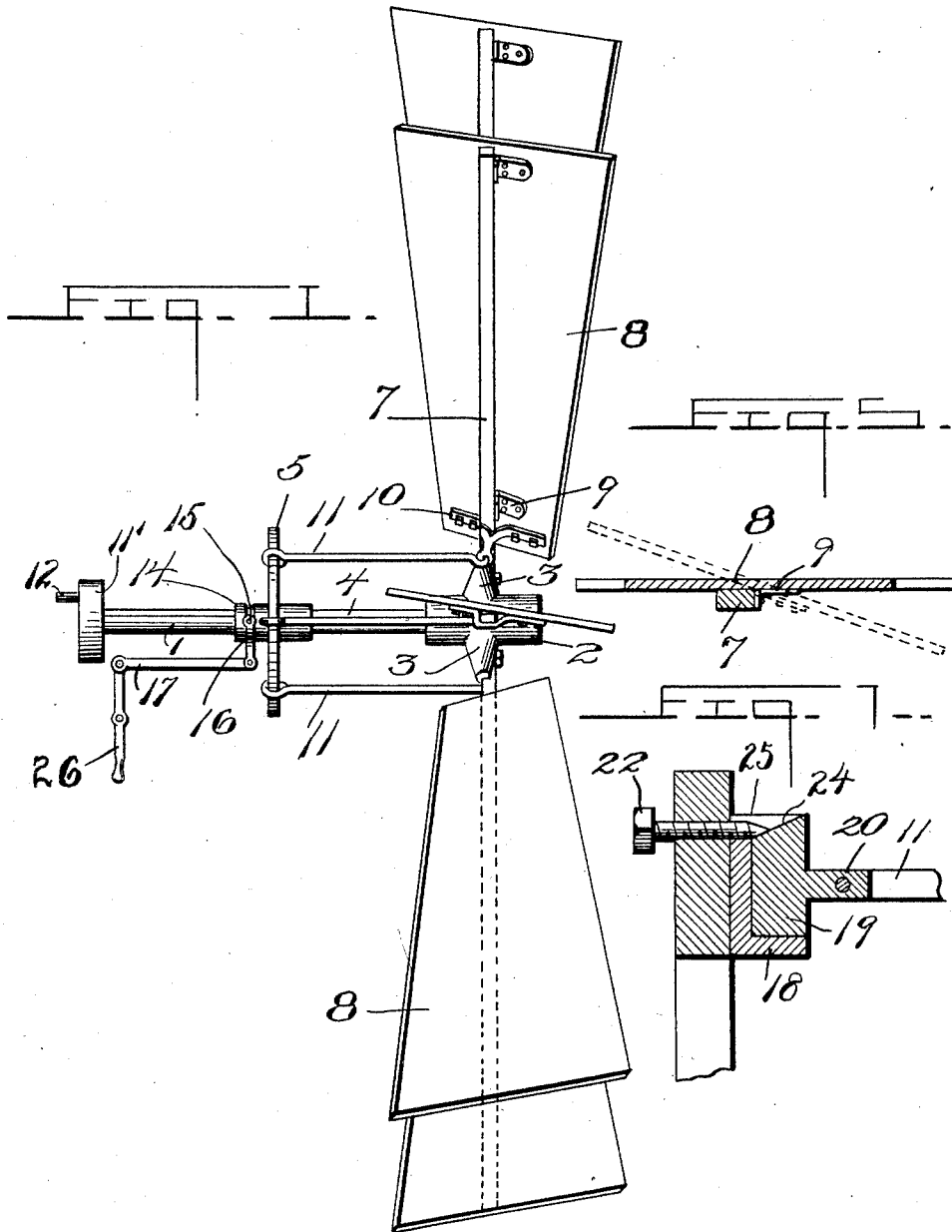
K. A. SPIETH.
WINDMILL.

APPLICATION FILED SEPT. 24, 1910.

1,009,935.

Patented Nov. 28, 1911.

3 SHEETS—SHEET 1.



Witnesses

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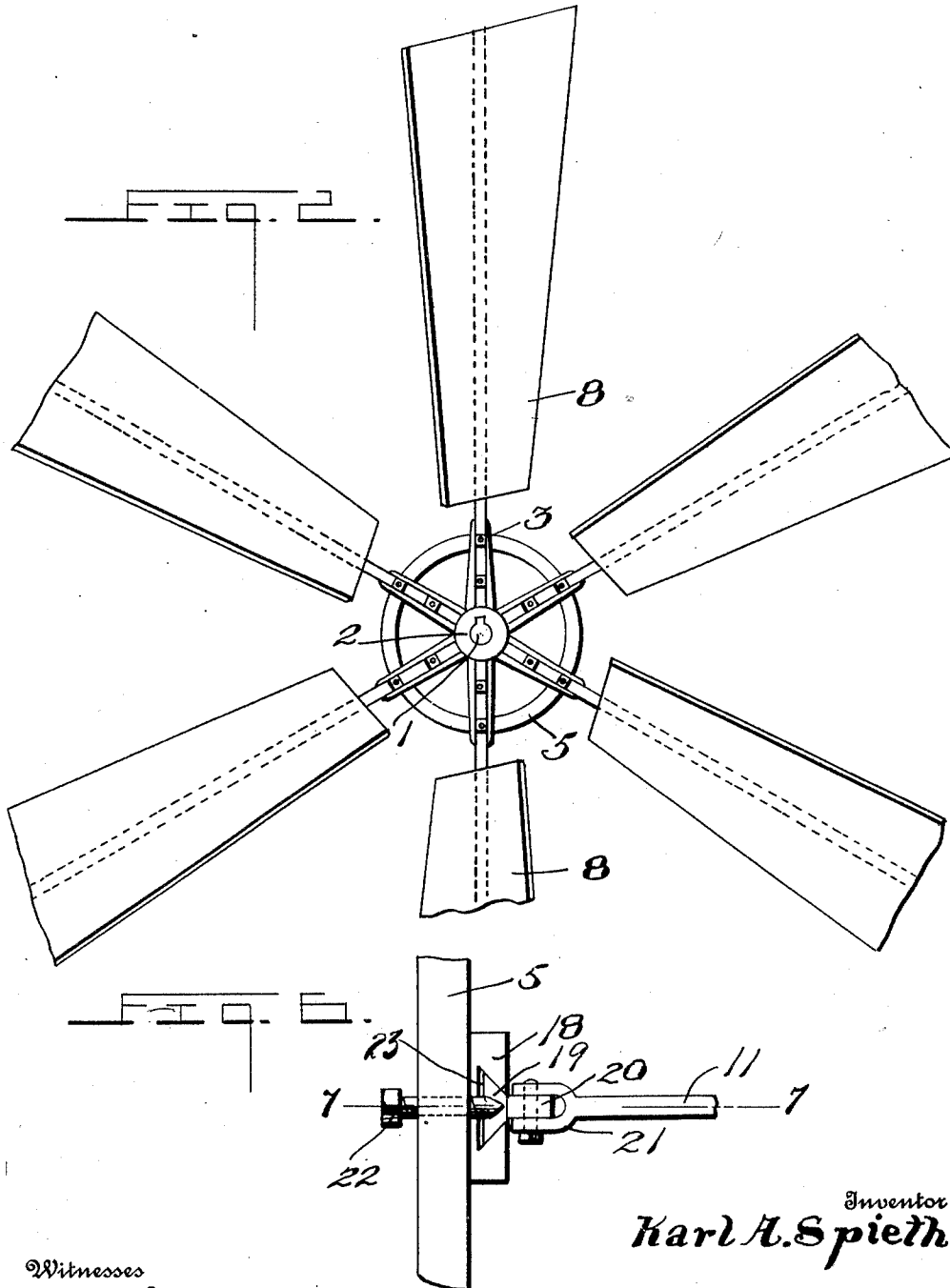
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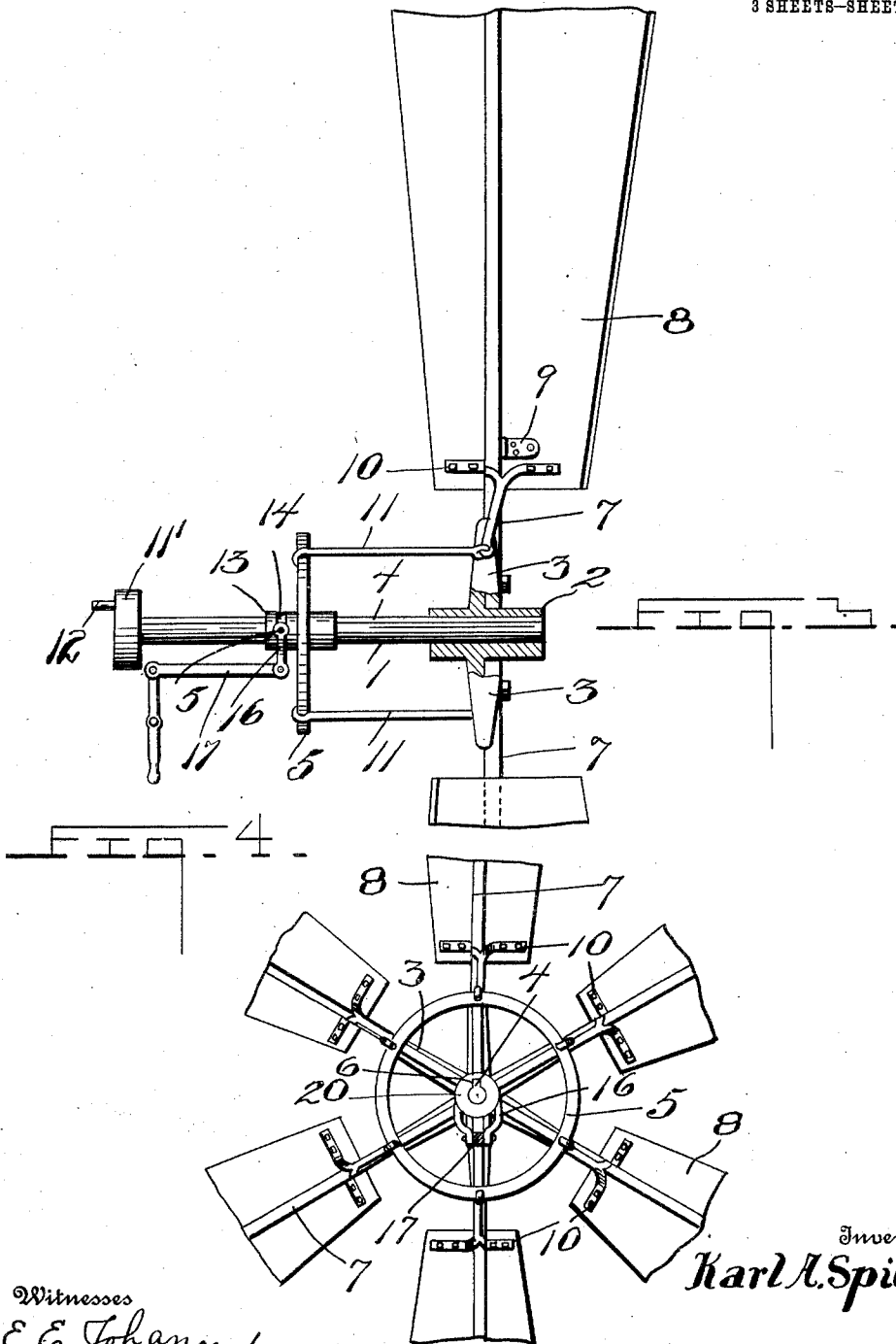
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3 SHEETS-SHEET 3.



Witnesses

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UNITED STATES PATENT OFFICE.

KARL A. SPIETH, OF AMHERST, NEBRASKA.

WINDMILL.

1,009,935.

Specification of Letters Patent.

Patented Nov. 28, 1911.

Application filed September 24, 1910. Serial No. 583,641.

To all whom it may concern:

Be it known that I, KARL A. SPIETH, a citizen of the United States, residing at Amherst, in the county of Buffalo and State of Nebraska, have invented certain new and useful Improvements in Windmills, of which the following is a specification.

This invention relates to wind mills and more particularly to those wherein the ordinary vane is dispensed with, the propelling blades being so constructed as to be utilized as a vane.

The object of the invention is to provide a simple, practical and efficient device of the character referred to, whereby the radially arranged blades are simultaneously operated at the proper angle for all practical purposes from a single power shaft.

Another object of the invention is in the provision of means for operating the propeller blades in respect to the power shaft, thereby obviating the necessity for moving the said blades on a parallel plane with said power shaft when it is desired to use the said blades as a vane for protecting the machine and parts thereof against the abrupt and variable action of the wind upon the propeller blades.

A further object of the invention is to provide means for automatically regulating the speed of the machine under various conditions and velocity of the air, and further in constructing and arranging the parts in such a manner that the blades will present a minimum amount of obstruction to the wind when the machine is out of gear, the blades under such conditions turning edgely and automatically to the wind in a position to operate as a vane.

With these and other objects in view, the present invention consists in the combination and arrangement of parts which will be hereinafter more fully described and claimed.

In the drawings: Figure 1 is a side elevation of the complete invention. Fig. 2 is a front view of the same. Fig. 3 is a vertical longitudinal section of the complete invention. Fig. 4 is a view of the machine in a reverse position to that shown in Fig. 2. Fig. 5 is a cross section of the blade showing its movable connection with the supporting arm. Fig. 6 is a detailed view of a modified form of connections between the wheel 5 and the rods 11. Fig. 7 is a section on the line 7—7 of Fig. 6.

The various parts comprising the improved machine are suitably mounted and supported in a frame construction of an improved and appropriate design and best adapted for the purposes.

Referring to the drawings 1 represents a power shaft which is suitably mounted in bearings forming a part of the frame work previously referred to, and to the outer end of which shaft is secured a spider composed of a hub 2 and radially arranged projecting arms 3 forming an integral part of the hub, to which arms are secured the propelling blades in a manner hereinafter described.

The power shaft 1 is provided with a feather 4 which extends along its length from the hub portion of the spider, and slidingly located upon said shaft is a wheel 5 the hub of which is provided with a groove 6 which freely receives the feather 4, said wheel being susceptible of a longitudinal movement and operated in a manner and for the purpose to be hereinafter described.

Rigidly secured to the radially projecting arms 3 of the spider are the inner ends of similarly arranged bars 7 to the edges of which are hingedly attached the flat plates 8 of suitable design and construction by means of hinges 9, thus permitting the said plates to be turned or operated independently of said bars when the machine is properly operated or adjusted in order to carry out the various functions.

Secured to the plates 8 are arms 10, and to the lower projecting ends of the same are movably connected the rods 11 the opposite ends of the latter being likewise attached to the wheel 5 at predetermined distances, whereby when the plates 8 or propelling blades are rotated the wheel 5 is likewise rotated and impart a similar motion to the power shaft 1.

Securely fixed to the shaft 1 opposite the end to which the spider is attached is a disk 11' and projecting therefrom is a pin 12 which is eccentrically arranged in respect to the disk, to which pin the ordinary and usual pitman rod (not shown) is attached for transmitting power to any suitable machinery, or for pumping water as is obvious in machines of this character.

The hub 13 of the wheel 5 is provided with a circumferentially arranged groove 14 which freely receives the oppositely posi-

tioned pins 15 forming a part of the collar 16, pivotally fixed to the end of the operating rod 17 which is adapted to be moved in a longitudinal direction in respect to the power shaft by suitable operative mechanism as the lever 26 for properly adjusting the wheel 5 upon said shaft, thereby causing the propeller blades to simultaneously assume the proper inclination for the practical operation of the machine under the various conditions of the wind to which the said machine and parts thereof are necessarily subjected.

In carrying out the practical construction of the machine it is clearly obvious that while the ends of the connecting rods 11 should be movably attached to the wheel 5 in order to permit the latter to be moved longitudinally upon the power shaft 1, the said connection should be of such construction as to be sufficiently strong and durable and susceptible of being readily repaired.

In Figs. 6 and 7 are shown secured to the side of the rim of the wheel 5, blocks 18 having inverted V-shaped slots 23, which snugly and removably receive the dove tail blocks 19 to the projecting ends 20 of which the forked ends 21 of the connecting rods 11 are hingedly attached. In order to hold the blocks 19 in a fixed position, binding bolts 22 are screwed through the rim of the wheel with their ends in frictional contact with the upper inclined surfaces of said blocks, whereby the said blocks are forced and bindingly held in a rigid position within the V-shaped slots 23 for the purposes previously described. Block 19 has one beveled side 24 which faces the open side 25 of the block 18, and the end of the binding bolt 22 bindingly engages the beveled side 24.

From the foregoing description it will be observed that the desired inclination may be readily given the propeller blades 8 by moving the wheel 5 upon the power shaft 1 by means of the operating rod 17, and further that any action upon the propeller blades by the wind will automatically move the wheel 5 upon the power shaft 1 and consequently properly regulate the speed of the machine according to the velocity of the wind in order to impart the proper momentum of rotation to the power shaft.

It will be apparent that changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

What is claimed is:

1. In combination with the power shaft of a wind mill, a hub fixed to the same and

provided with a series of radially arranged socketed arms, bars secured in said arms and projecting therefrom, propeller plates hingedly attached to said bars, a wheel slidably mounted upon the shaft, a feather forming a part of the shaft and received by a correspondingly shaped slot formed in the wheel, whereby the latter is prevented from rotation independently of the shaft, curved arms secured to said propeller blades, connecting links pivotally attached to the free ends of the curved arms, recessed blocks upon the wheel, blocks on the opposite ends of the links for connection with said recessed blocks for adjusting the wheel upon the shaft, and a crank disk secured to one end of the power shaft.

2. In combination with the power shaft and movable propeller blades carried thereby, of a wheel slidably mounted upon said shaft, means for preventing the same from being rotated independently of said shaft, said wheel having slots formed in the face thereof and circumferentially arranged blocks removably held within said slots and having upper inclined faces, screws passed through the rim of the wheel the ends of which are adapted to be brought into frictional and binding contact with the upper inclined faces of said blocks, and connections between the blocks and the propeller blades, whereby said blades are adjustable in a transverse direction in respect to the length of the power shaft when the wheel is moved upon said shaft.

3. The combination with the power shaft and movable propeller blades carried thereby, of a wheel rigidly mounted upon said shaft, means for preventing the same from being rotated independently of said shaft, said wheel having slots formed in the face thereof and circumferentially arranged, blocks removably held within said slots and having inclined faces, screws passed through the rim of the wheel the ends of which are adapted to be brought into frictional and binding contact with the inclined faces of said blocks, and connections between the blocks and the propeller blades, whereby said blades are adjustable in a transverse direction in respect to the length of the power shaft when the wheel is moved upon said shaft.

In testimony whereof I affix my signature, in the presence of two witnesses.

KARL A. SPIETH.

Witnesses:

THEODORE WAGNER, Jr.,
GEORGE L. VEAL.