

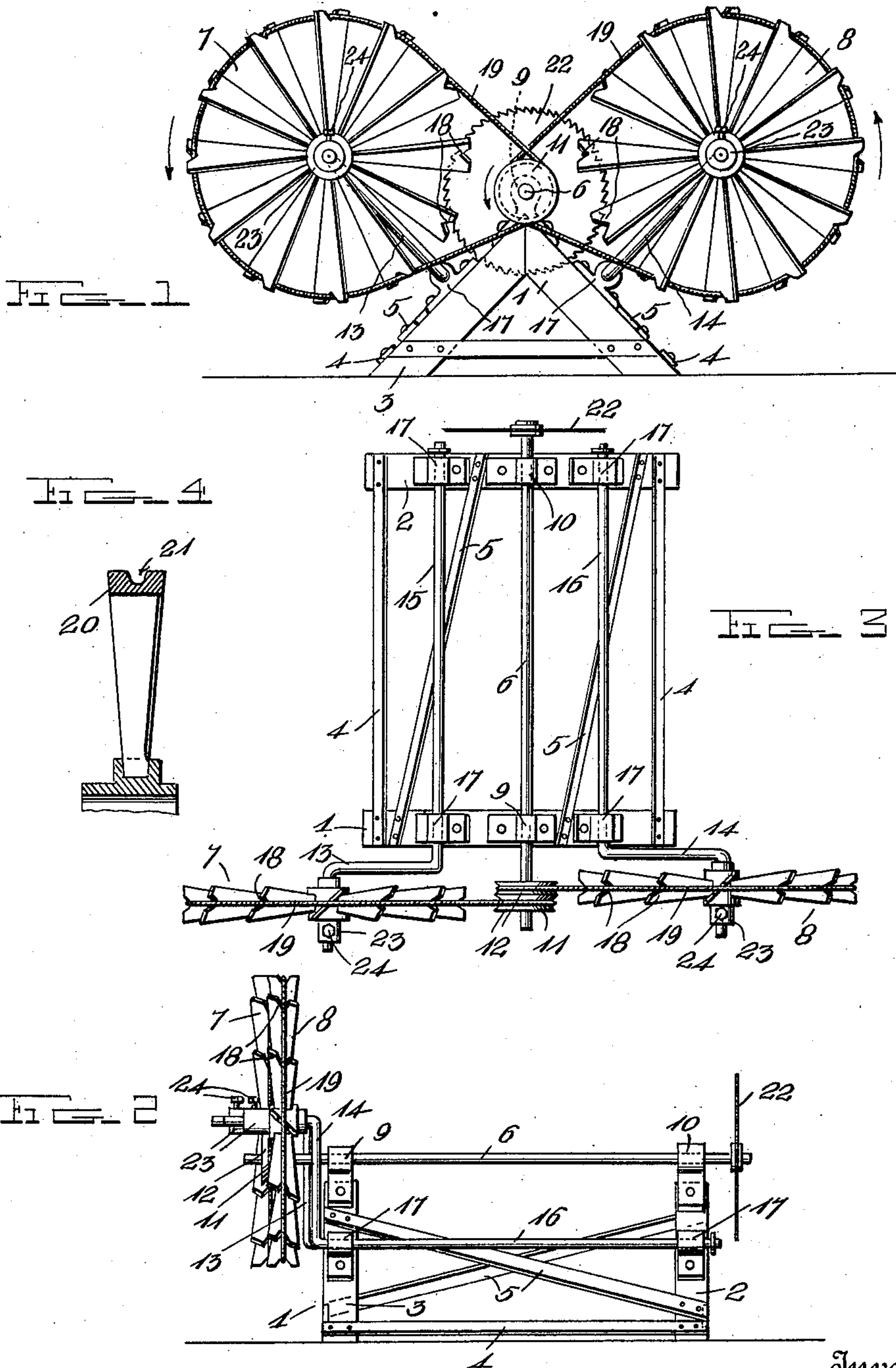
G. HALVERSON.

WINDMILL.

APPLICATION FILED JAN. 28, 1908.

903,374.

Patented Nov. 10, 1908.



Witnesses
C. H. Griesbauer.

Inventor
George Halverson

By *A. B. Wilson & Co*
Attorneys

UNITED STATES PATENT OFFICE.

GEORGE HALVERSON, OF WASECA, MINNESOTA.

WINDMILL.

No. 903,374.

Specification of Letters Patent.

Patented Nov. 10, 1908.

Application filed January 23, 1908. Serial No. 412,990.

To all whom it may concern:

Be it known that I, GEORGE HALVERSON, a citizen of the United States, residing at Waseca, in the county of Waseca and State of Minnesota, have invented certain new and useful Improvements in Windmills; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to wind mills, more particularly to portable wind mills and has for its object to provide a device of this kind which may be easily and cheaply constructed and which will be convenient and efficient in operation.

Another object is to provide in a wind mill convenient means whereby the power may be transmitted directly from the wheel of the wind mill, more particularly from the periphery thereof, to the point of application.

Another object is to provide novel means whereby the shaft which transmits the power is so placed with respect to the wind wheel that the belt connecting the two will tend to prevent said shaft from bearing on its bearings to an undesirable extent.

Another object is to provide a device of this kind which may be easily taken apart and stored away when not in use. And still another object is to provide in a device of this kind two or more wheels so arranged relative to the transmission shaft of the device that the belts connecting said transmission shaft with said wheels will in combination with each other and the force of gravity acting upon the transmission shaft balance the transverse forces acting against said shaft so that said shaft will not bear on its bearings in any one direction more than another.

For these and other objects which will appear as the description proceeds my invention consists of certain novel combinations and arrangements of parts of which the hereindescribed wind-mill is one of many embodiments which will illustrate the invention.

While herein I have described minute details of the construction of my invention, I do not limit myself to these, as the details and arrangements of the various parts may be greatly varied without departing from the spirit and scope of the invention.

While this wind-mill is described particularly for a portable wind-mill to be used for various purposes on the farm, it is understood that the various parts may be con-

structed of any size and for any use whatever.

If desired, attractive toys may be made after the manner of the hereindescribed wind-mill.

In the annexed drawings forming a part of this specification, which are for illustrative purposes only and therefore not drawn to any particular scale, and in which like reference characters refer to like parts throughout the several views, Figure 1 is an end view of the wind-mill, Fig. 2 is a side elevation, Fig. 3 is a top plan view and Fig. 4 is an enlarged view of a detail of a modification, part being shown in section.

The hereindescribed embodiment of my invention comprises a wind-mill having a supporting frame 1, comprising A-shaped end pieces 2 and 3, fastened together by means of longitudinal and diagonal braces 4 and 5 and on which are mounted the transmission shaft 6 and the wind-wheels 7 and 8; the transmission shaft 6 is mounted near each end in bearing boxes 9 and 10 upon the apex of the pieces 2 and 3. At the forward end of said shaft is fixedly mounted the pulley-wheel 11, having therein a pair of annular grooves 12. The wind-wheels 7 and 8 are directly mounted for rotation upon the crank-shaped ends 13 and 14 of the side shafts 15 and 16, which are mounted for oscillatory movement in bearing boxes 17 placed intermediate the ends of the legs of the trusses 2 and 3. It will thus be seen that the distance between the wheels 7 and 8 and the pulley 11 may be varied by the angular movement of the crank-shaped ends 13 and 14.

The outer ends of the blades of the wheels 7 and 8 may be provided with notches 18 which together form guides for the belts 19 by which the motion of the wheels is transmitted to the pulley 11.

It will be seen on reference to Fig. 1 that the force of gravity acting upon the wheels 7 and 8 tend to force the same away from the pulley 11, whereby the belts 19 are held tight. It will also be noted that the shaft 6 is below the level of the bearings of the wheels 7 and 8. This arrangement is provided so that the force exerted by the wheels in tending to move away from the pulley 11 will not only counterbalance the opposing horizontal forces acting against the pulley 11 but will also tend to lift the pulley 11 directly upward, the weights and positions of the vari-

ous parts being such that all of the forces acting transversely to the axis of the pulley 11 neutralize each other.

It is of course understood that I may use any form of wind wheel desired and may substitute for the notches 18 an annular rim 20 provided with a groove 21 for the reception of the belt 19. It is of course understood that for either of these means I may substitute any means whereby the power may be transmitted to the shaft 6.

It will be noticed on referring to Fig. 3 that the wheel 7 is slightly in advance of the wheel 8. This is desirable in order that the belts 19 will not interfere with each other but may be each received in the separate grooves 12.

At the rear end of the shaft 6 I provide a saw 22 which is preferably provided with a feeding table (not shown).

The wheels 7 and 8 are provided with the movable collars and pins 23 and 24 whereby said wheels may be removed from the frame when the crank-shaped ends 13 and 14 are folded over upon the pulley 11, after which these various parts may be stored away in any convenient place until it is desired to use them again.

It is thought that the operation, construction and use of my device will be understood without further explanation.

Having thus described my invention, what I claim and desire to secure by Letters-Patent is:—

1. The combination of a supporting structure, a transmission shaft rotatably mounted thereon, an oscillatory shaft carried by said structure, a wind wheel rotatably mounted on said oscillatory shaft, connection between the periphery of said wheel and said transmission shaft to constrain relative rotation, said oscillatory shaft permitting the position of the wind wheel to be varied relatively to said shaft.

2. The combination of a supporting structure, a transmission shaft rotatably mounted thereon, a wind wheel, rotative connection between said wheel and said transmission shaft and a crank shaft pivoted to adjustably support said wheel relative to said shaft.

3. In combination a supporting structure and a shaft rotatably mounted thereon, pivoted means mounted on said structure, a wheel mounted on said pivoted means and connection between said shaft and said wheel, said parts being so arranged that the action of gravity upon said wheel tends to force said wheel outwardly whereby said connection acts to draw said shaft upwardly.

4. In combination a supporting structure, a pair of crank shafts mounted on said structure and having wind wheels rotatably mounted thereon, an intermediate transmission shaft also rotatably mounted on said structure and belts from said wind wheels to

said transmission shaft, said belts pulling on said transmission shaft with substantially equal opposite forces.

5. In combination a supporting structure, an intermediate transmission shaft rotatably mounted thereon, wind-wheels on opposite sides of said shaft, crank-shaped shafts mounted on said supporting structure and supporting said wind wheels, belts over said wind-wheels to said shaft, the axes of said crank shaped shafts being above the level of the axis of said shaft, whereby the pull on said belts tends to lift said shaft straight upward in its bearings.

6. In combination a supporting structure and an intermediate transmission shaft rotatably mounted thereon, wind-wheels on opposite sides of said shaft, crank-shaped shafts mounted on said supporting structure and supporting said wind wheels, belts over said wind wheels to said transmission shaft, the axes of said crank shaped shafts being above the level of the axis of said transmission shaft, whereby the pull on said belts tends to lift said transmission shaft straight upward in its bearings, the various parts being so arranged that the forces acting transversely upon said transmission shaft are substantially neutralized.

7. In a portable wind mill a pair of A shaped trusses, longitudinal and cross braces rigidly connecting said trusses in spaced relation, a transmission shaft rotatably mounted on the apices of said trusses, means to be operated connected with the rear end of said shaft, a double grooved pulley rigidly mounted on the forward end of said shaft, bearing boxes intermediate the ends of each of the legs of said trusses, shafts having limited oscillatory movement mounted in said bearings, the forward ends of said shafts being crank shaped and provided at their outer ends with forwardly projecting horizontal lying bearings, wind wheels rotatably mounted on said bearings, said crank shaped portions extending diagonally, upwardly and outwardly from said last named shafts, guides on the peripheries of said wind wheels, belts in said guides and connecting said wind wheels with said grooved pulley, and removable means holding said wind wheels on said bearings, one of said wind wheels being placed slightly forward of the other whereby the belts are not in the same plane, the bearings of said wind wheels being above the level of said first named shaft.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

GEORGE HALVERSON

Witnesses:

L. M. CURRY,
H. M. KILPATRICK.