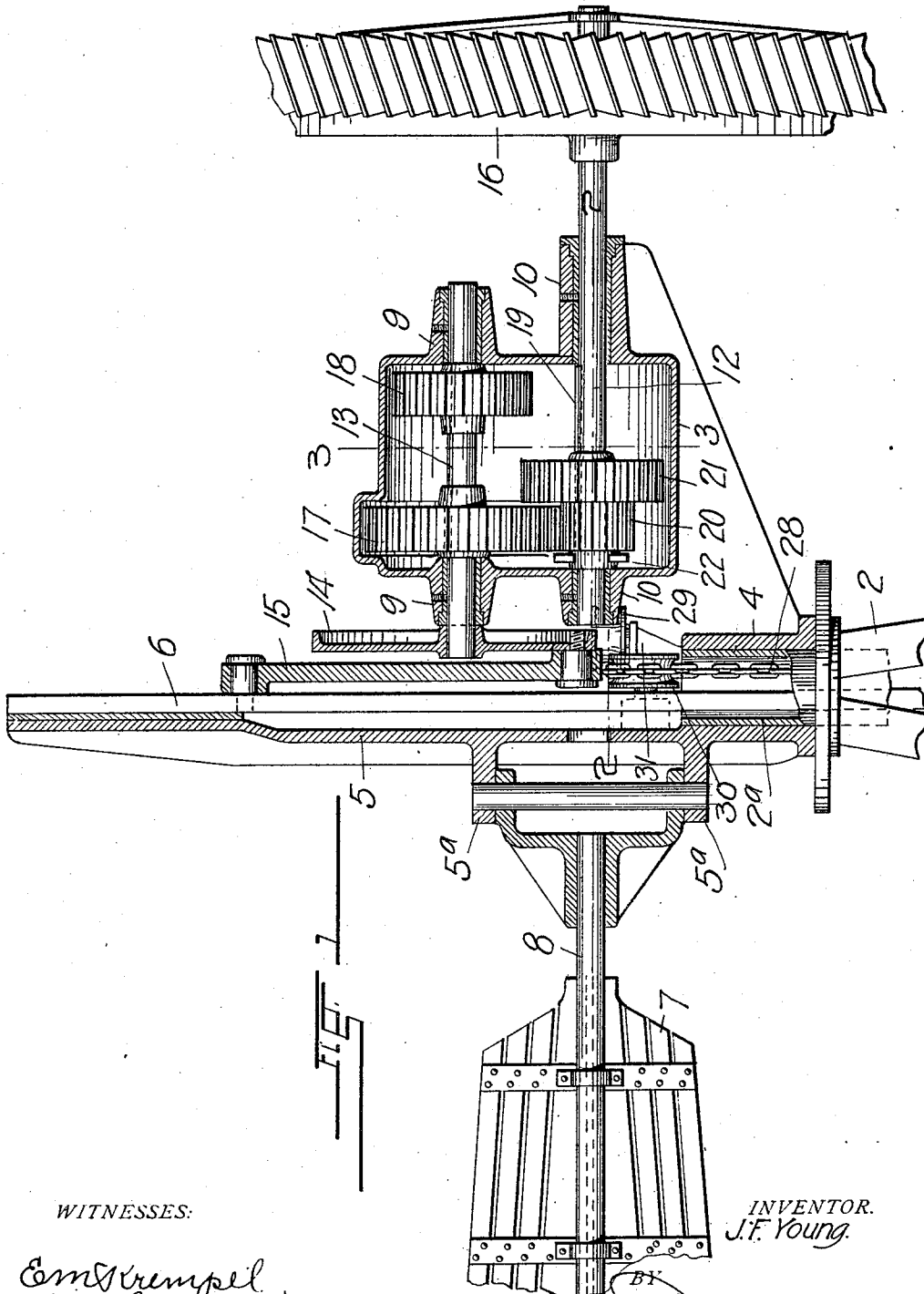


J. F. YOUNG.
WINDMILL.
APPLICATION FILED FEB. 21, 1911.

1,046,706.

Patented Dec. 10, 1912.

2 SHEETS—SHEET 1.



WITNESSES:

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F. H. Cuno

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J. F. Young

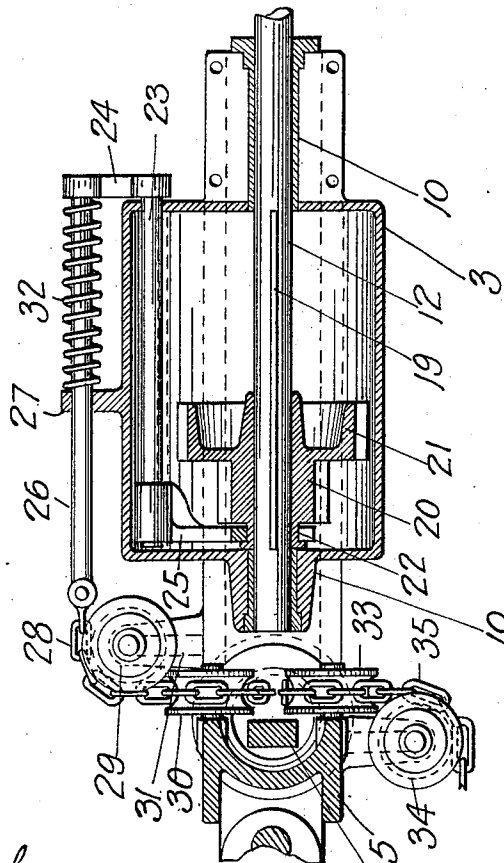
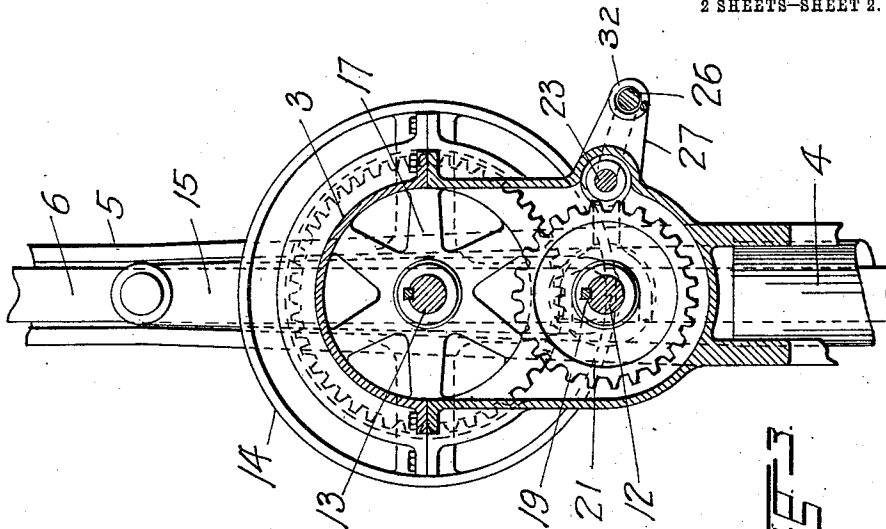
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UNITED STATES PATENT OFFICE.

JESSE F. YOUNG, OF NORTHPORT, NEBRASKA.

WINDMILL.

1,046,706.

Specification of Letters Patent.

Patented Dec. 10, 1912.

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To all whom it may concern:

Be it known that I, JESSE F. YOUNG, a citizen of the United States of America, residing at Northport, in the county of Morrill and State of Nebraska, have invented certain new and useful Improvements in Windmills, of which the following is a specification.

This invention relates to improvements in windmills and its principal object resides in the provision of a change speed gearing by means of which the movement of the windwheel may be transmitted to the pump or other contrivance operated by the mill, at either an equal or a reduced rate of speed.

The windmills of the ordinary form at present in common use, are either constructed to operate the plunger bar at a velocity equal to that of the wind wheel by direct connection therewith, or they are designed to actuate said bar at a reduced rate of speed by an interposed reduction gearing. Either one of these two types of mills is selected by the purchaser in accordance with the average wind velocity in the locality in which it is to be installed and with the amount of motive power required which in case the mill is used for water elevating purposes, depends mainly on the depth below the surface of the ground at which the water is found.

By the use of my improved mechanism one mill may, by a simple adjustment, be adapted to perform the functions of both the above described direct-operating and geared mills and is for this reason, capable of furnishing any desired amount of motive power at a low as well as a high wind pressure.

In the accompanying drawings in the various views of which like parts are similarly designated Figure 1 represents a vertical sectional view of the upper portion of a windmill tower and the superposed movement, Fig. 2, a horizontal section taken along the line 2—2, Fig. 1, and Fig. 3, a fragmentary, vertical section taken along the line 3—3, Fig. 1.

Referring to the drawings by numerals, 2 designates the upper portion of the tower which, as usual, carries a vertical, hollow spindle 2^a, upon which the working head of the mill is rotatably mounted. The latter includes a gear case 3, formed integral with a vertical sleeve 4, which, in practice, surrounds the spindle, and with an upright 5

which provides a guide way for the vertically reciprocating plunger bar 6.

The upright 5 has upon its outer surface a pair of laterally extending, parallel lugs 5^a for the support of the vane or steering rudder 7 which, as usual, is slidably mounted upon a horizontal shaft 8.

The case 3 is provided at opposite sides with two sets of axially alined bearings 9 and 10 for the support of the horizontal wheel shaft 12 and the therewith parallel crank shaft 13. The latter carries upon one of its extremities, exteriorly of the case, a crank wheel 14 which, by means of a pitman 15, is operatively connected with the plunger bar 6, and the wheel shaft 12 supports at one of its extremities the wind wheel 16, which when acted upon by the wind, imparts a rotary movement to the said shaft.

The crank shaft is provided with two gear wheels 17 and 18 of different diameters which are fixed upon said shaft, within the case 3, in spaced relation to each other, and the wheel shaft carries a double driving gear which is slidably connected therewith by means of a longitudinally extending feather 19.

The members 20 and 21 of the driving gear are adapted to mesh, respectively, with the gears 17 and 18 on the crank shaft, the wheels 21 and 18 being of equal diameters to transmit the movement of the wind wheel to the plunger bar at an equal rate of speed, while the others are of dissimilar diameters to transmit said movement at a reduced velocity.

The members of the driving gear are preferably formed integral with each other and with a circumferentially grooved collar 22, by means of which the sliding gear is connected with the adjusting mechanism the construction of which will now be described.

Slidably mounted in an opening in the side of the case 3, in parallel relation to the wheel shaft, is a rod 23, which at its extremities carries two oppositely projecting arms 24 and 25, one of which, 25, terminates in a fork, the parallel prongs of which extend through the circumferential groove in the collar 22. The other arm 24 which extends outside the casing is connected with the end of a second rod 26 which being parallel with the rod 23, is slidably supported in an apertured bracket 27 formed integral with the adjacent wall of the case 3.

The rod 26 connects at its free extremity, with a chain 28 which runs over two sheaves 29 and 30 one of which is mounted to rotate about a vertical axis upon a laterally extending arm 31 formed integral with the upright 5, while the other rotates about an axis at right angles to that of the sheave 29 and is disposed above the hollow spindle 2^a through which the chain depends to a point in proximity to the ground, where it may be secured by any suitable means. A coiled spring 32, which surrounds the rod 26, is applied between the arm 24 and the bracket 27 for the purpose of resiliently maintaining the driving gear in the position in which the larger one of its members is in mesh with the corresponding wheel 18 on the crank shaft 13. A second pair of sheaves 33 and 34, which rotate at right angles to each other, is provided to support a chain 35, by which the position of the rudder 7 on the shaft 8 may be varied.

The casing 3 which is constructed as fluid tight as the conditions will permit, is in practice, supplied with a lubricant through which the gears revolve and which by the movement of the said gears is carried to the several bearings.

It will be evident from the above description that when the parts are in the position shown in Fig. 1 of the drawings, the movement of the wind wheel is imparted to the pump or other contrivance operated by the mill, at a reduced rate of speed, and that by merely releasing the chain 28, which normally is fastened at its lower end, the gearing is by the action of the spring 32, adjusted to operate the plunger bar at a speed equal to that of the wheel 16.

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

1. A windmill construction comprising a hollow tower, a working head mounted thereon and including a fluid tight casing, a crank shaft and a wheel shaft extending through said casing to rotate about parallel

axes, a change-speed gearing within said casing for transmitting the movement of the wheel shaft to the crank shaft at either the same or a reduced rate of speed, a pair of angularly arranged sheaves on the head and a chain extending through said tower and over said sheaves in connection with said gearing whereby it may be adjusted from a point of lower elevation.

2. A windmill movement comprising a tower, a working head mounted thereon, a crank shaft and a wheel shaft rotatably mounted on said head, a change speed gearing on the said head for transmitting the movement of the wheel shaft to the crank shaft at different rates of speed, and a mechanism adapted to adjust said gearing from a point on the tower remote from the head.

3. A windmill construction comprising a tower, a working head mounted thereon and including a fluid-tight casing, a crank shaft and a wheel shaft extending through said casing to rotate about parallel axes, a change-speed gearing within said casing for transmitting the movement of the wheel shaft to the crank shaft at different rates of speed, and means operatively connected with said gearing and adapted to adjust the same from a point on the tower remote from the said head.

4. A windmill movement comprising a tower, a working head mounted thereon, a crank shaft and a wheel shaft rotatably mounted on said head, a change speed gearing on the said head for transmitting the movement of the wheel shaft to the crank shaft at different rates of speed, and a chain suspended from said head and operatively connected with the gearing so as to adjust the same from a point of lower elevation.

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

JESSE F. YOUNG.

Witnesses:

WM. H. WILLIS,
CLYDE SPANOGLE.