

No. 762,159.

PATENTED JUNE 7, 1904.

J. E. FILLMAN & W. DAVIS.
WINDMILL.

APPLICATION FILED MAR. 26, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

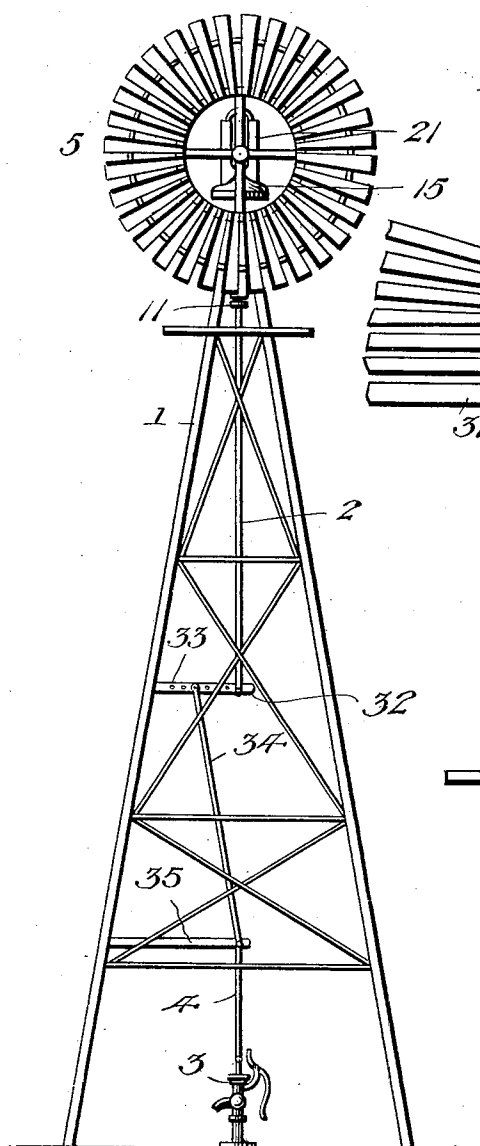
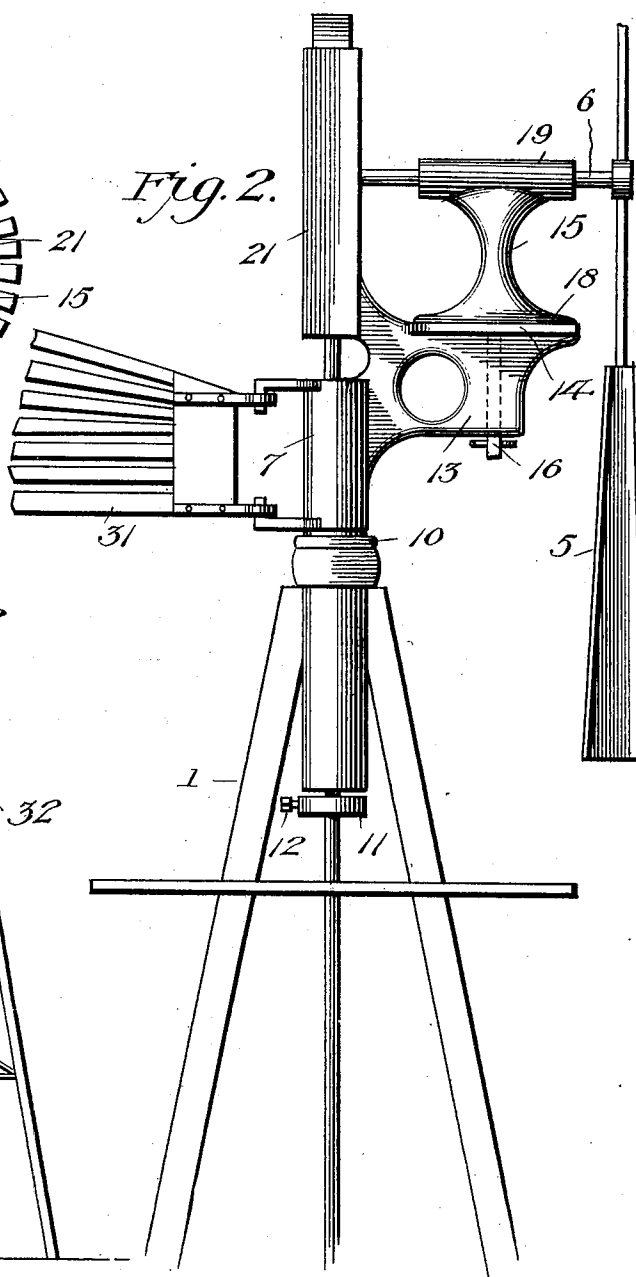


Fig. 2.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

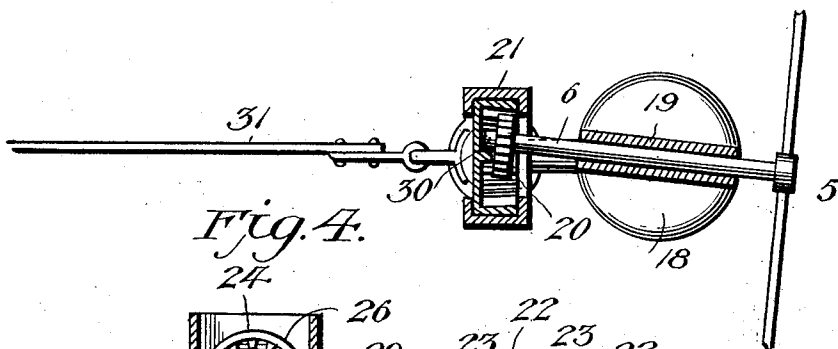


Fig. 4.

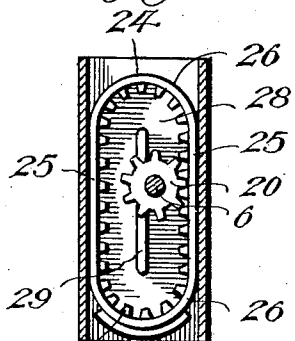


Fig. 5.

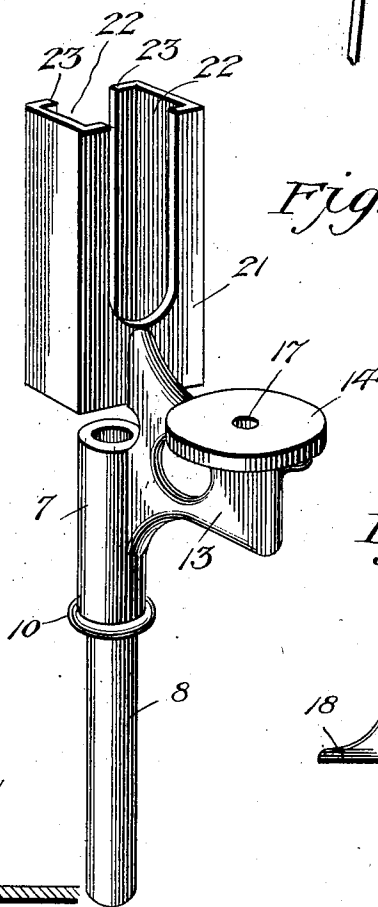
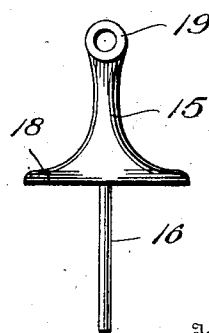


Fig. 6.



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UNITED STATES PATENT OFFICE.

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WINDMILL.

SPECIFICATION forming part of Letters Patent No. 762,159, dated June 7, 1904.

Application filed March 26, 1904. Serial No. 200,154. (No model.)

To all whom it may concern:

Be it known that we, JOHN E. FILLMAN and WILLIAM DAVIS, citizens of the United States, residing at Meno, in the county of Woods, Oklahoma Territory, have invented new and useful Improvements in Windmills, of which the following is a specification.

This invention relates to windmills, and has special reference to the transmission-gear, or, in other words, the gearing interposed between the wind-wheel shaft and the plunger rod or stem, whereby the said plunger-rod is actuated by a direct stroke, thereby greatly simplifying the mechanism and adding to the life and durability of the same. Provision is also made whereby the stroke of the pump rod or stem may be regulated to suit the velocity of the wind and other conditions.

With the above general objects in view the invention consists in the novel construction, combination, and arrangement of parts, as herein fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a front elevation of a windmill and tower, illustrating the present invention. Fig. 2 is an enlarged side elevation of the upper portion of the mill, illustrating the rotary head and the parts connected therewith and mounted thereon. Fig. 3 is a sectional plan view of the head. Fig. 4 is a vertical section through the mechanism shown in Fig. 2, showing the manner of gearing the wind-wheel shaft to the plunger-rod. Fig. 5 is a detail perspective view of the rotary head and guide or gear-case. Fig. 6 is a view in elevation of the oscillatory bearing or swivel-head.

Like reference-numerals designate corresponding parts in all figures of the drawings.

Referring to the drawings, 1 designates a windmill tower or stand composed of any usual or suitable framework, 2 the plunger-rod, which extends vertically through the top of the tower, 3 a pump, 4 the pump rod or stem, 5 the wind-wheel, and 6 the wind-wheel shaft, the said parts being of any usual or preferred construction and arrangement.

In carrying out the present invention the rotary head (shown at 7) is provided with a downwardly-extending shank or spindle por-

tion 8, which is received in a head tube or socket 9, mounted on the upper end of the tower or stand. The head is provided with a shoulder or bearing 10, which rests on the upper end of the head-tube 9, while a stop-collar 11 is fastened on the lower end of the shank 8 and adjusted by means of a set-screw 12 for the purpose of preventing upward movement of the head under rapid rotation, at the same time permitting the head of the mill to be removed whenever necessary.

The rotary head 7 is provided with a laterally-projecting bracket 13, provided with a horizontally-disposed and disk-shaped table or rest 14, upon which is placed an oscillatory bearing or swivel-head 15, having a downwardly-extending stem 16, which fits and is journaled in the opening 17, located centrally of the table or recess 14, as shown in Fig. 5, the bearing 15 being provided, by preference, with an enlarged disk-shaped base 18 to provide a proper bearing for the swivel-head on the bracket 13 and table 14. The bearing or swivel-head 15 is provided at its upper end with a horizontally-disposed sleeve 19, through which the wind-wheel shaft 6 passes and in which it is journaled, as shown in Figs. 2 and 3. The shaft 6 has the wheel 5 mounted fast on its outer end, while it is provided at its inner end with a pinion 20, fast thereon.

Connected with the bracket 13 is an upwardly-extending gear-case and guide 21, which may be left open at front and back and which is provided with guide ways or grooves 22, formed by oppositely-located pairs of flanges 23, as clearly shown in Figs. 3 and 5. Mounted to reciprocate in a rectilinear path up and down within the combined guide and gear-case 21 is an oblong internal gear 24, or, in other words, a gear consisting of a rim having parallel sides 25 and rounded end portions 26, while the rim as a whole is provided along its inner face with teeth or cogs 27. The gear is closed at the back by means of a plate or cover 28, and connected therewith is a centrally-arranged guide 29, in connection with which a guide-roll 30 on the rear end of the wind-wheel shaft 6 operates in the manner illustrated in Fig. 4. The internal gear 24 is

mounted fast on the upper end of the plunger-rod 2, while said rod passes downward through the tubular portion of the rotary head 7 in the manner illustrated in Fig. 4.

5 During the rotation of the wind-wheel the pinion 20 meshes first with one side of the internal gear and then with the other, being held in engagement with the teeth by means of the central guide 29, which operates on the
10 guide-roller 30. It will be observed that the plunger-rod 2 and internal gear 24 work in a vertical and perfectly rectilinear path, thus imparting a direct stroke or action to the plunger-rod, while the wind-wheel shaft is
15 mounted in a swivel-head or oscillatory bearing which automatically shifts itself so as to permit the pinion 20 to work in constant engagement with the teeth of the internal gear 24. The windmill may be equipped with the
20 usual tail-vane 31.

At a suitable point in the height of the tower a stroke-regulating lever 32 is provided, the same being pivotally connected at one end to the tower and having the plunger-rod 2 con-
25 nected to its opposite end. Said lever is provided with a longitudinal series of holes 33, to any one of which may be connected the upper end of a pitman or connecting rod 34, the lower end of which is jointed to the pump-rod
30 4 either with or without the interposition of a second guide-lever 35 connected with the tower. By the means just described any desired stroke may be given to the pump-rod 4, so as to adapt the mechanism as a whole to
35 the velocity of the wind.

Parts of the mill not hereinabove particularly described may be constructed or arranged in any usual or preferred manner, and changes in the form, proportion, and minor
40 details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention.

Having thus described the invention, what is claimed as new, and desired to be secured
45 by Letters Patent, is—

1. Transmission-gear for windmills comprising a sectional head one section of which is rotatable on the tower and the other section mounted to oscillate on the first-named section,
50 a wind-wheel shaft journaled on the oscillatory section, and gearing interposed between said shaft and the plunger-rod.

2. A windmill comprising a tower, a plunger-rod, a wind-wheel shaft having a pinion,
55 a rotary head on the tower, a bearing for the

wind-wheel shaft mounted to oscillate on the rotary head, and a rectilinearly-movable gear on the plunger-rod actuated by said pinion.

3. A windmill comprising a tower, a head journaled on a vertical axis thereon and provided with an offstanding bracket, a swivel-head journaled on a vertical axis on said bracket and adapted to oscillate, a wind-wheel shaft journaled in said swivel-head, a vertical
60 plunger-rod, an oblong internal gear mounted fast on said rod, a pinion on the wind-wheel shaft meshing with said internal gear, and means for maintaining the engagement between said pinion and internal gear and causing the wind-wheel shaft to oscillate.
65

4. A windmill comprising a tower, a rotary head journaled on a vertical axis thereon and provided with an offstanding bracket, a swivel-head journaled on a vertical axis in said bracket, a wind-wheel shaft journaled in said
70 swivel-head, a combined guide and gear-case connected with the rotary head, a vertically-movable plunger-rod, an internal gear mounted fast on said plunger-rod and working up and down in the combined guide and gear-
75 case, a pinion fast on the wind-wheel shaft and meshing with the internal gear, and means for maintaining the engagement between the pinion and the internal gear and causing the wind-wheel shaft to oscillate.
80

5. A windmill comprising a tower, a rotary head journaled on a vertical axis thereon, a swivel-head journaled on a vertical axis on the rotary head, a wind-wheel shaft journaled in said swivel-head, a vertical plunger-rod,
85 an internal gear mounted fast on said rod, a combined guide and gear-case in which the internal gear moves, a pinion on the wind-wheel shaft meshing with said internal gear, a central guide connected with the internal
90 gear, a roller on the wind-wheel shaft cooperating with said guide to maintain the engagement between the pinion and internal gear, a pump-rod, and a stroke-regulating lever interposed between the pump-rod and
95 plunger-rod whereby the stroke of the pump-rod may be regulated, substantially as described.
100

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN E. FILLMAN.
WM. DAVIS.

Witnesses:

JAMES W. HILL,
ROLA FISHER.