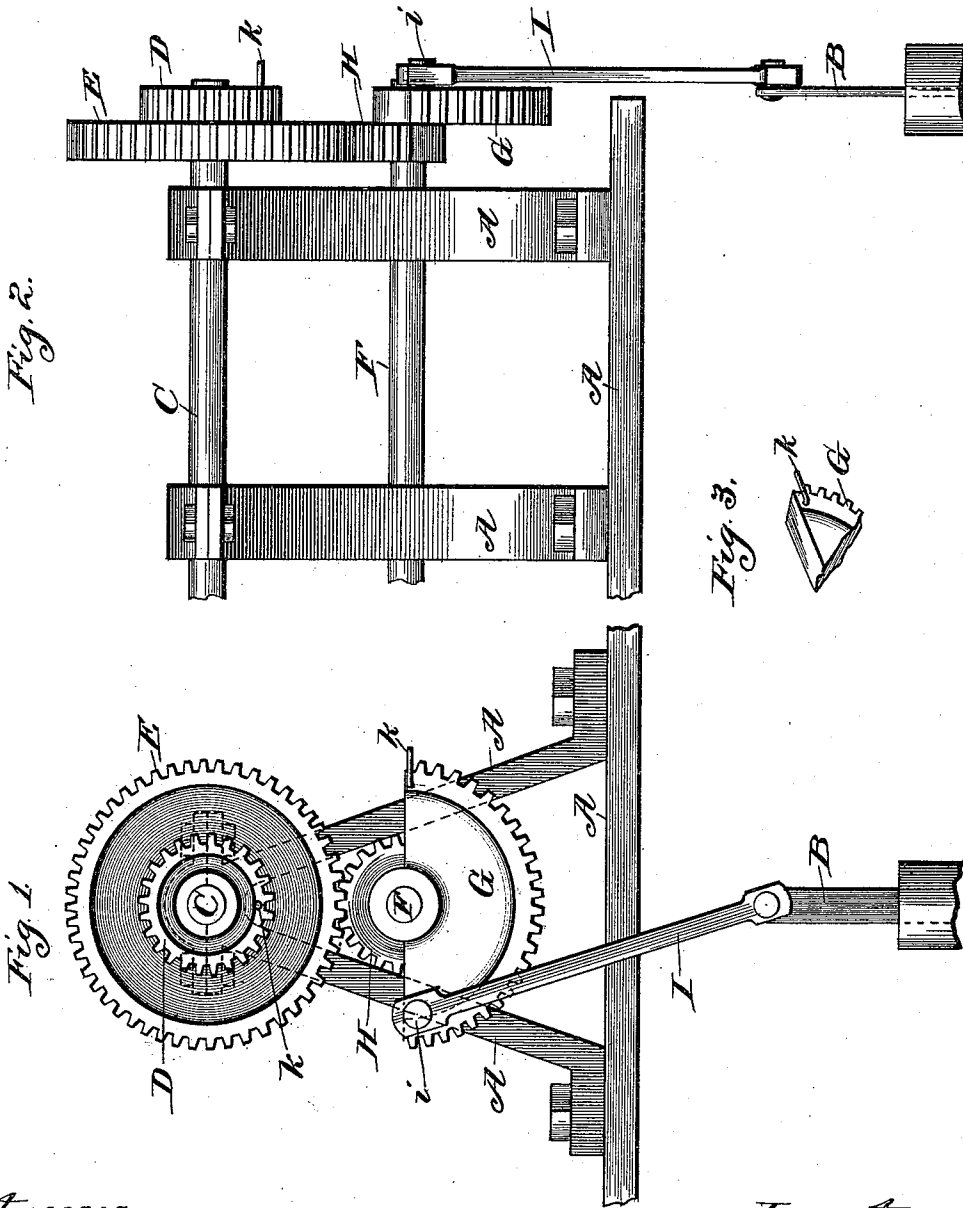


(No Model.)

G. M. ALLEN.
GEARING FOR WINDMILLS.

No. 463,980.

Patented Nov. 24, 1891.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE M. ALLEN, OF BELOIT, WISCONSIN.

GEARING FOR WINDMILLS.

SPECIFICATION forming part of Letters Patent No. 463,980, dated November 24, 1891.

Application filed February 19, 1891. Serial No. 382,122. (No model.)

To all whom it may concern:

Be it known that I, GEORGE M. ALLEN, a citizen of the United States of America, residing at Beloit, in the county of Rock and State of Wisconsin, have invented a certain new and useful Improvement in Gearing for Windmills, of which the following is a specification.

Referring to the accompanying drawings, in which like reference-letters indicate like parts, Figure 1 is an end elevation; Fig. 2, a side elevation, and Fig. 3 a detail of the engaging-pin.

In windmills employed for pumping water it is sometimes desirable to utilize about two revolutions of the wind-wheel in lifting the pump-rod to one in lowering it. This has been done in various ways by different forms of mechanism.

My invention consists in a new means for accomplishing the result referred to; and the principle of the invention consists in the employment of two wheels of different diameter fixed upon the driving-shaft, in combination with two circular segment-disks of different diameter rigidly connected to each other upon a separate axis of rotation, so that as the driving-shaft rotates the larger disk will gear with the smaller wheel and the smaller disk with the larger wheel alternately, the pump-rod being actuated by a pitman connected to a wrist-pin on one of the disks or by other equivalent device, as I will now proceed to explain in detail.

In the drawings, A is the mill-head; B, the pump-rod; C, the wind-wheel shaft; D, a small pinion fixed to the wind-wheel shaft; E, a larger pinion, also fixed to the wind-wheel shaft or the wheel D; F, a shaft or stud independent of shaft C, but parallel thereto; G, a circular segment-disk (preferably semicircular) mounted upon shaft F and gearing with pinion D, and H a smaller circular segment-disk mounted upon shaft F and so connected to disk G as to rotate therewith and gearing with the larger pinion E. It is immaterial whether the wheels D E are attached rigidly to each other or each rigidly to the shaft C,

and whether the two disks G H are attached rigidly to each other and mounted loose on a fixed stud, in which case a wrist-pin *i* and pitman I must be employed to communicate motion from them to the pump-rod, or whether they are each attached rigidly to one and the same shaft, in which case a crank and pitman or eccentric and strap may be employed to communicate motion to the pump-rod. The difference in diameter of the two pinions, which may be varied as desired, determines the difference in radius of the two disks, the sum of the radii of the large disk and small pinion being equal to that of the small disk and large pinion, and each sum equal to the distance between the two axes of rotation.

In lifting the pump-rod the small pinion gears with the large disk, and thus gives slow movement and great power. When the rod has reached the upper limit of its traverse, the large disk and small pinion disengage, and the small disk and large pinion engage, giving a quick downstroke to the rod.

To insure the proper alternative engagements of the disks and pinions, either of the pinions may be provided with a suitable projection or projections *k* to strike the edge of one of the disks or some projection thereon, and thus bring the two disks around properly for the change of engagement.

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

In a windmill, the combination of the wind-wheel and pump-rod with two pinions of different diameters rotating together and with the two circular segment-disks of different radius rotating together upon an axis of motion parallel to that of the pinions and driven by said pinions through the alternate engagement of the small pinion and large disk and the large pinion and small disk, substantially as described.

GEORGE M. ALLEN.

Witnesses:

W. M. HILL,
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