

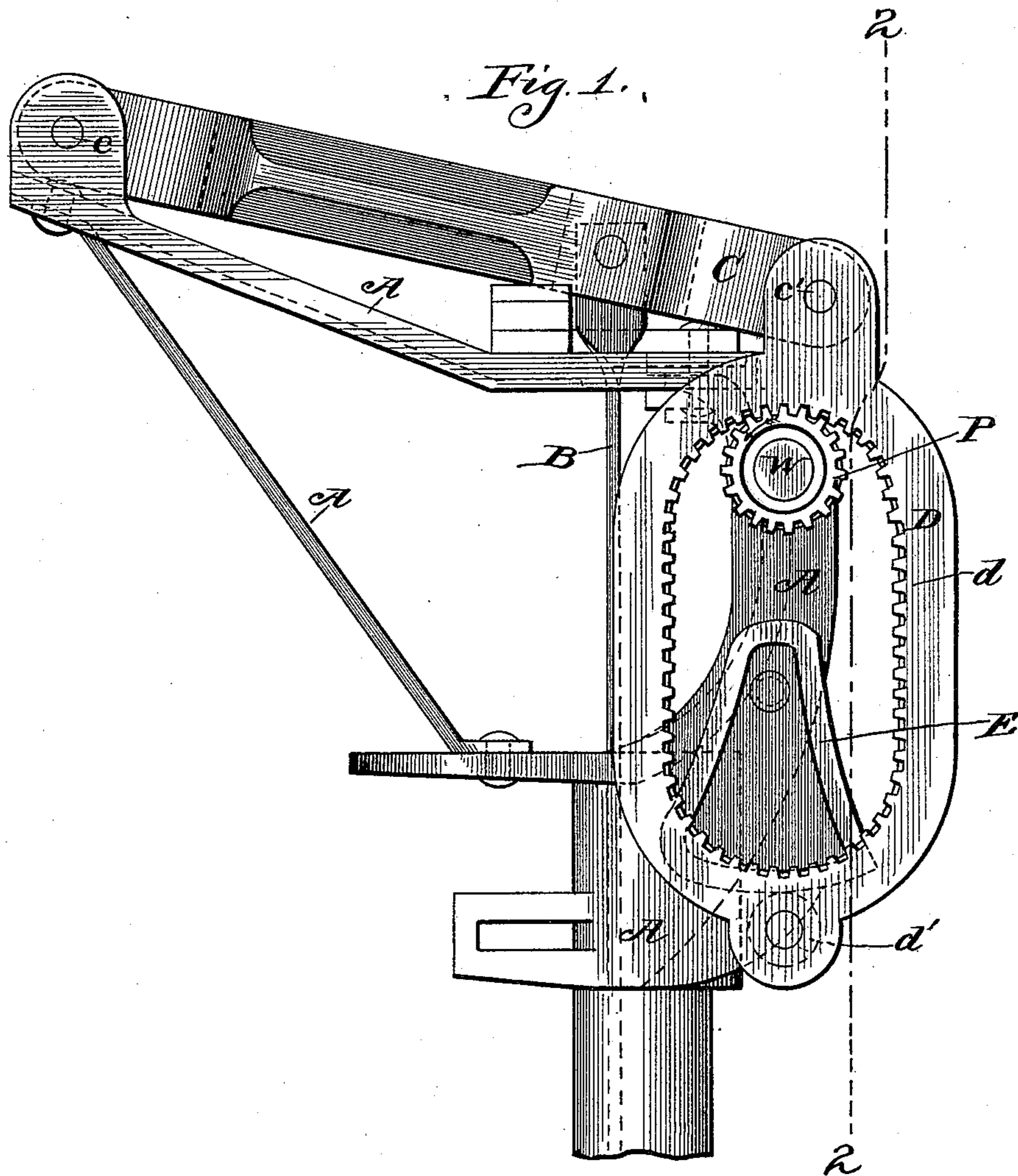
(No Model.)

2 Sheets—Sheet 1.

G. M. ALLEN.  
GEARING FOR WINDMILLS.

No. 463,979.

Patented Nov. 24, 1891.



Witnesses  
N. C. Corlies  
Martin H. Olsen.

Inventor  
George M. Allen  
By L. Hill  
His Atty

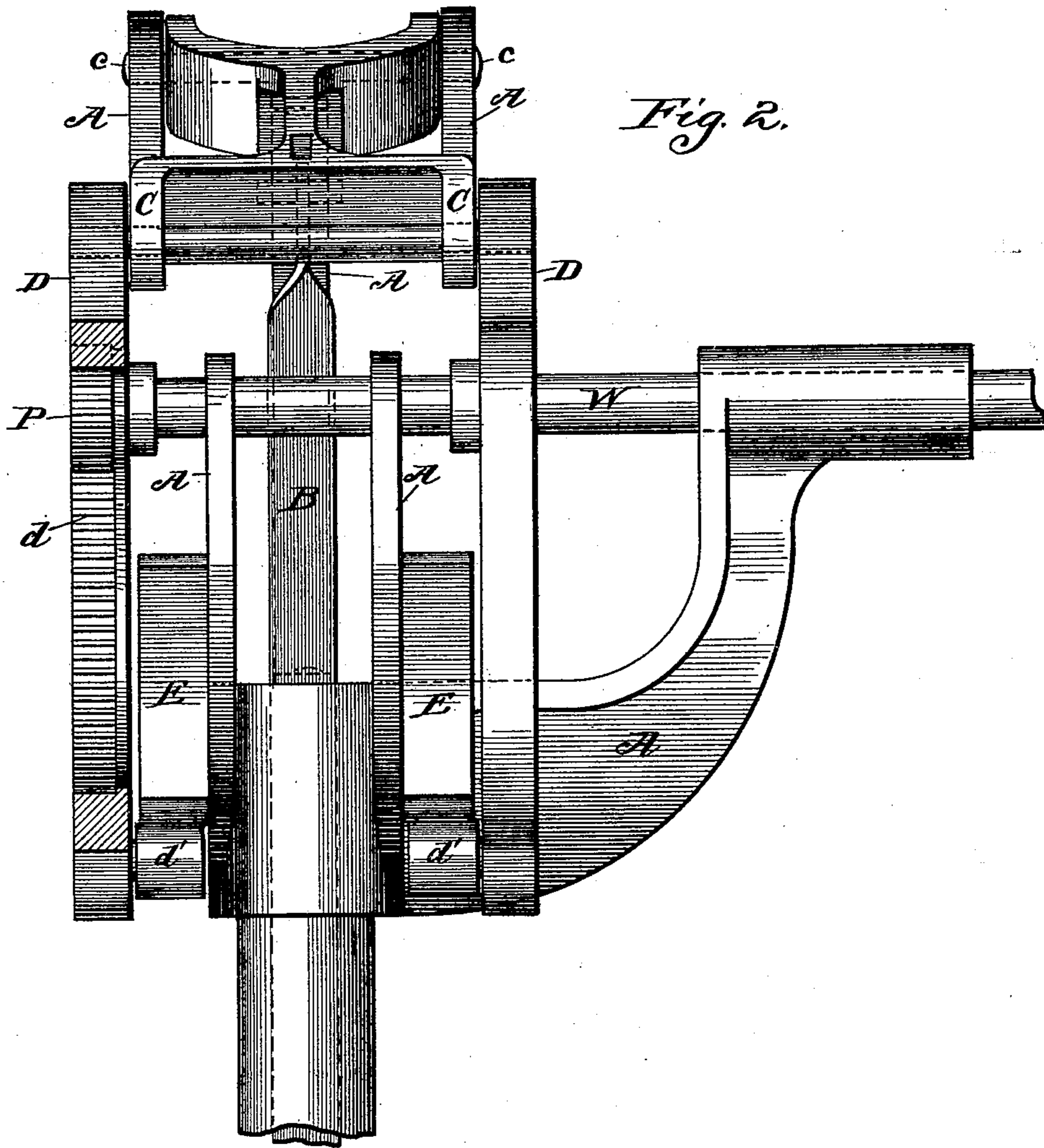
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# UNITED STATES PATENT OFFICE.

GEORGE M. ALLEN, OF BELOIT, WISCONSIN.

## GEARING FOR WINDMILLS.

SPECIFICATION forming part of Letters Patent No. 463,979, dated November 24, 1891.

Application filed February 19, 1891. Serial No. 382,121. (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 certain new and useful Improvements in Gearing for Windmills, of which the following is a specification.

In the accompanying drawings, wherein like reference-letters indicate like parts, Figure 1 is a side elevation; Fig. 2, an elevation with a partial section in line 2 2 of Fig. 1.

The object of my invention is to impart from the rotating wind-wheel shaft to the reciprocating pump-rod a number of reciprocations less in any given time than the number of rotations of the wind-wheel in the same time; and the invention consists in the mechanical means hereinafter described and then definitely claimed.

In the drawings, A indicates the mill-head or turn-table, and B a rod which is swiveled at its lower end to the pump-rod so as to raise and lower the latter. The rod B is vertically guided in any suitable manner; but I prefer to actuate it by means of a lever C, pivoted to the mill-head at *c*, in which case the lever itself will sufficiently guide the rod. To the outer end of the lever C, I pivot a yoke D in the form of a ring flattened or compressed at its sides, as shown, and having its interior edge provided with cogs *d*. Meshing with these cogs is a pinion P, fixed to the wind-wheel shaft W, which by its rotation raises and lowers the lever C and rod B through the action of the pinion upon the yoke D. At its lower end the yoke carries a friction-roller *d'*, which bears against the outer edge of a guide E, attached to the mill-head. The guide E is of peculiar form, being narrow at its upper end and wide at its lower end, both of which are convex, while its sides are concave. The proportions of the yoke D and guide E may be varied somewhat, according to the form of movement desirable to produce; but I prefer to construct them substantially in the form and relative proportions shown in the drawings.

The action with the form of apparatus here illustrated is as follows: Assuming the pump-rod to be at the lower end of its traverse, the pinion, yoke, and guide will occupy the relative positions shown in Fig. 1, the pinion being about at the middle of the upper end of the yoke (rotating in the direction indicated by the arrow) and the roller *d'* traveling under the lower end of the guide. In this position the action of the pinion upon the cogs *d* is such as to tend to force the yoke to the left, and as by reason of its pivot *c'* it cannot yield at its upper end its lower end is necessarily swung around to the left on the pivot *c'* as a center, causing the roller *d'* to ride out from under the guide. The pinion now lifts the yoke and the roller *d'* rides up the concave side of the guide. As it reaches the convex top of the guide the lower end of the yoke reaches the under side of the pinion, and the latter thereupon swings the yoke quickly to the right, causing the roller *d'* to ride down the opposite concave side of the guide, and thence under the latter to its original position, and so on continuously, the ascent and descent of the yoke carrying with it the lever C and imparting the desired reciprocating movement to the pump-rod. During this action the yoke is confined to a perfectly definite line of travel by the combined action of the pivot *c'*, the pinion P, the roller *d'*, and the guide E. With the parts constructed in the relative proportions shown in the drawings the pump-rod will make about one complete reciprocation to three revolutions of the driving-pinion P, which gives the pump great power and a sufficiently rapid action for the purposes for which this class of pumps are used.

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

1. In a windmill for the purpose of actuating the pump-rod by the rotary motion of the wind-wheel, the combination of the lever C, guided rod B, connected with said lever, and the pinion P, with the yoke D pivoted at one end to said lever C and provided with

the roller  $d'$  and with the guide E, formed and applied as described, substantially as herein set forth.

2. In a windmill and for the purpose of operating the pump-rod by the rotary motion of the wind-wheel, the combination of the lever C, the rod B, and toothed yoke D, both pivotally connected with said lever C, and the

yoke being provided with the roller  $d'$ , with the pinion P, and guide E, having concave sides and convex top and bottom, substantially as described.

GEORGE M. ALLEN.

Witnesses:

W. M. HILL,

FRANCIS E. DRESSER.