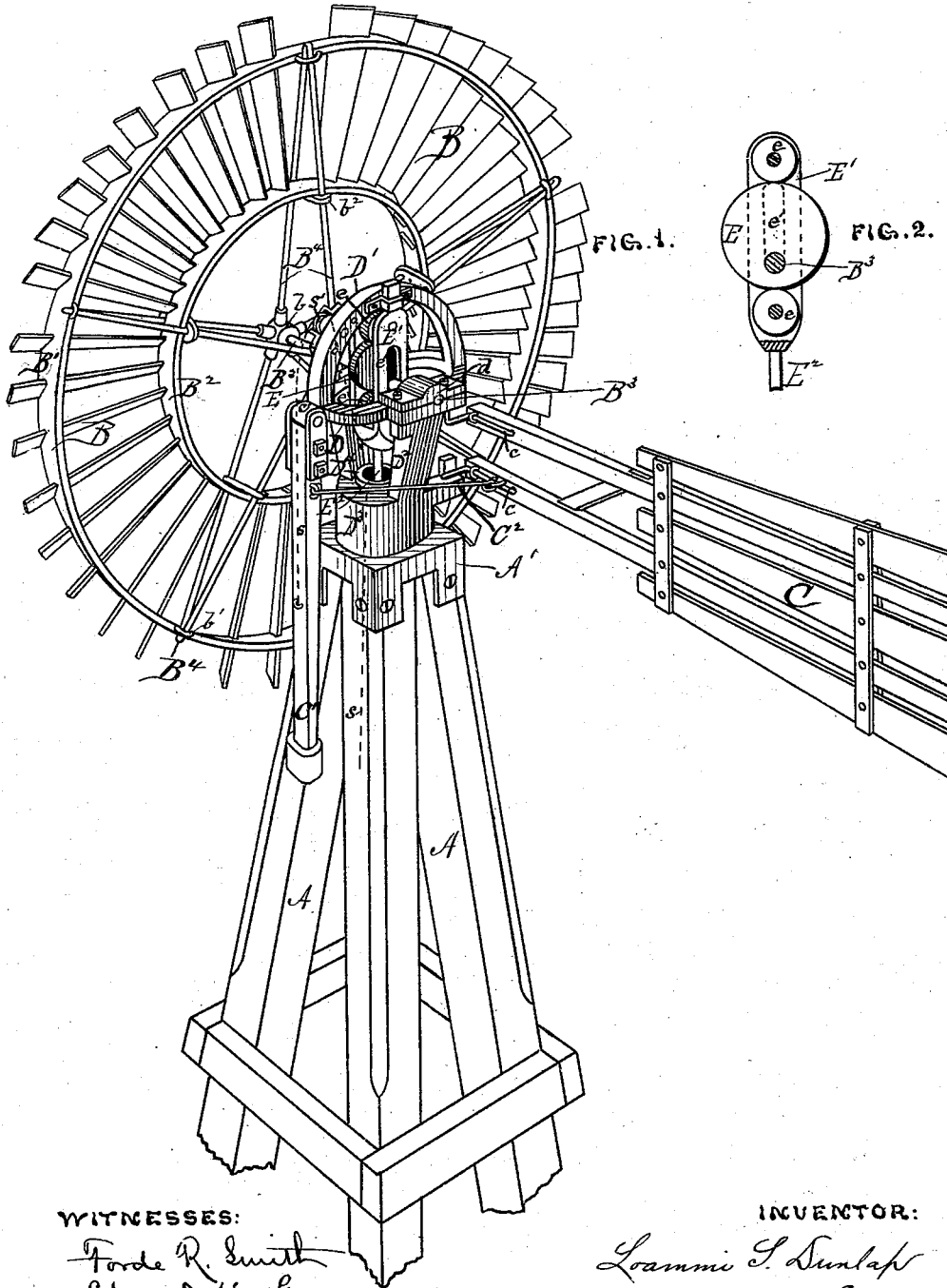


L. S. DUNLAP.
Wind-Mill.

No. 209,334.

Patented Oct. 29, 1878.



WITNESSES:

Forde R. Smith
Edmund Ascock

INVENTOR:

Loammi S. Dunlap
by Munday & Coverts
his attys.

UNITED STATES PATENT OFFICE.

LOAMMI S. DUNLAP, OF GALENA TOWNSHIP, LA PORTE COUNTY, INDIANA.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **209,334**, dated October 29, 1878; application filed May 13, 1878.

To all whom it may concern:

Be it known that I, LOAMMI S. DUNLAP, of Galena township, in the county of La Porte and State of Indiana, have invented certain Improvements in Windmills, of which the following is a specification:

In the accompanying drawing, which forms a part of this specification, Figure 1 is a perspective view of my improved windmill. Fig. 2 is a central vertical section of the eccentric and rollers and the parts wherein they are held, which I employ to convert the rotary motion of the wheel-shaft into reciprocating motion for the pump-rod.

Like letters indicate like parts in both figures.

In said drawing, A represents the supports of the mill, and B the wheel and C the vane of the same.

The sails of the wheel are let into and held by two rings, B¹ and B², which are supported from the shaft B³, whereon the wheel revolves, by bent metal spokes or arms B⁴. These arms are formed of metal rods, bent to an Λ shape, the ends being secured in hubs *b* upon the shaft, and the apex united to the outer ring by a staple, *b*¹, and the two parts straddle the inner ring, a brace, *b*², being placed immediately within the last-named ring, and serving not only to stiffen the two branches of the arm, but also as a means of locking the ring firmly to the arms.

All the arms of the wheel are similar in construction to that described.

The wheel thus constructed is very firm and strong, and will resist all the strains to which it is likely to be subjected.

The shaft B³ has two bearings, *d*, upon the turn-table D, one of the same being hidden by the arch D¹ in the drawing.

The turn-table D is constructed of a horizontal rim, spanned upon a line parallel with the plane of the wheel by the arch D¹, and supported upon two standards, D², at either side, the lower ends of said standards being connected to a rotating hub, D³, revolving upon a hollow axis, D⁴, centrally placed upon the crown-plate or top piece, A¹, of the framing A.

Upon the shaft B³, between its bearings, is an eccentric, E, immediately over and below which are two rollers, *e e*, having their pivots inserted in the forked parts of the metal piece E¹, from which the pump-rod depends. These rollers are at such distance apart as to permit the eccentric to turn freely between them. The force of gravity will tend, of course, to keep the upper roller always in contact with the eccentric; but the lower one will be in contact only a portion of the time.

Both sides of the piece E¹ are slotted, as shown at *e'*, for the wheel-shaft, and so that they may rise and fall as the eccentric revolves. One of the sides terminates at the top in a rectangular or other shaped projection, which slides in a correspondingly-shaped opening at the side of the arch D¹, and thus steadies and guides the piece E¹ and insures its retention in the same vertical plane at all times.

The pump-rod E² passes downward through the axis D⁴ in the usual manner.

The vane C is hinged by pivots upon the ends of the connecting-rods *c* to the rim D and hub D³ at one side of the line of the shaft B³, and is governed by a weighted lever, C¹, supported by and swinging upon a hinge, *c'*, at the foot of the arch D¹, the connection between the vane and lever being the rod C².

The operation of these parts will be fully understood by those familiar with the art, as they have been before combined with a windmill; but my arrangement differs from previous ones in the relative location and in the construction of the devices, and I attain thereby simplicity and cheapness, with ease and certainty of operation.

A cord, *s*, attached to the weighted lever, and running over a sheave, *s'*, upon the arch, and from thence down through the hollow axis, as shown in dotted lines, may be employed when it is designed to throw the wheel out of the wind.

I claim—

1. The combination, with the wheel-shaft and the pump-rod, of the eccentric, circular in form, mounted upon the shaft, the smooth rollers carried in forked and slotted piece E¹, and

said forked and slotted piece, all being constructed, arranged, and operating as described.

2. The combination, with the wheel-shaft, the pump-rod, and the device for converting and communicating motion, of the projection upon the forked piece and the opening at the

side of the arch D, in which said projection slides, for steadying and guiding the pitman, substantially as set forth.

LOAMMI S. DUNLAP.

Witnesses:

A. A. SHEAD,
McDONALD SHEAD.