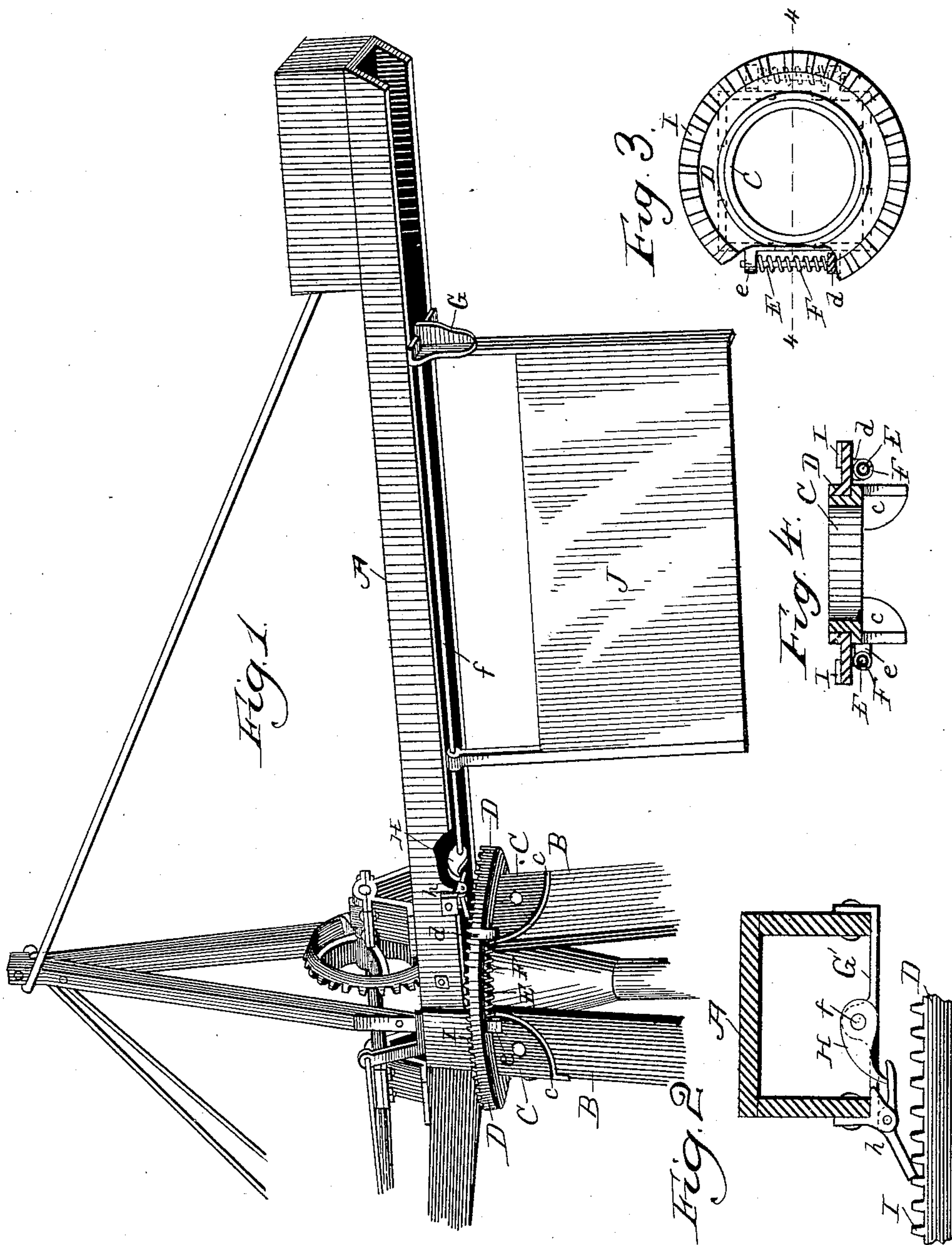


(No Model.)

W. D. NICHOLS.
WINDMILL.

No. 390,698.

Patented Oct. 9, 1888.



Witnesses:
Chas. E. Gaylord.
Lew. C. Curtis.

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UNITED STATES PATENT OFFICE.

WILLIAM D. NICHOLS, OF ELGIN, ILLINOIS.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 390,698, dated October 9, 1888.

Application filed February 26, 1886. Serial No. 193,303. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. NICHOLS, a citizen of the United States, residing in Elgin, in the county of Kane and State of Illinois, have invented a new and useful Improvement in Windmills, of which the following is a specification.

This invention relates to devices for correcting the side draft of geared tailless windmills, and is an improved device for that purpose.

It consists in the mill having a pawl engaging with an annular rack on the tower, as herein-after stated, when said rack is permitted a slight rotation upon its support and a spring-cushion is employed to resist such rotation. This feature prevents any sudden wrenching of the tower, which would result if the rack were immovable.

In the drawings, Figure 1 is a perspective of that portion of the mill to which my invention has been applied. Fig. 2 is a detail showing the operation of the cam and weighted pawl. Fig. 3 is a plan of the annular rack, partly broken away to show the spring-cushion. Fig. 4 is a central vertical section of the tower-cap and the rack-carrying rim.

In said drawings, A represents the beam of a tailless mill supported upon posts B, forming the tower, said beam supporting the usual counterbalance-weight shown as customary in mills of this class heretofore patented to me. The top of these posts is provided with a cap, C, having sockets *c* for the posts. A rim, D, encircles this cap and is free to turn thereon, to a limited extent at least. On the under side of this rim is a lug, *d*, and to the cap is affixed another lug, *e*. Through these lugs passes a small rod, E, encircled by a coiled spring, F. The rod is free to slide in one of the lugs, and holds the spring which is confined at the ends by the two lugs. This construction renders the rack yielding and prevents sudden wrenching or straining of the tower by the side draft.

J is the hinged wing suspended from the mill. It is attached to and operates the shaft *f*, hav-

ing a bearing, G, at the outer end and another bearing, G', at the inner end. Upon the shaft *f* is a cam, H, which, when the wing is moved by the wind in one direction, contacts with a pivoted pawl, *h*, and lifts said pawl from contact with the annular rack I upon the upper surface of the rim D. The pawl being weighted engages automatically with the rack at all other times, and so resists the side draft and holds the wheel in the wind, and it remains unaffected when the wing swings in the other direction.

The operation of the invention is as follows: Supposing the wheel to be out of wind and at rest, the wing J hangs vertically and the cam is disengaged from the dog, which being weighted will then be in mesh with the rack. Now, when the wheel is put in wind the side draft commences and tends to force the wheel around, against, and out of the wind; but as the pawl still remains in mesh that tendency is effectually counteracted. Should the wind now shift to a direction against the motion of the wheel, the wheel moves into line, and the dog, which resists motion in one direction only, remains inoperative, slipping along over the rack without positive engagement; but if the wind shifts to a direction with the motion of the wheel then the hinged wing J swings and causes the cam to lift the pawl, so that the wheel is then free to move into line, when the gravity of wing J brings it back to the vertical position, leaving the pawl free to engage again with the rack.

I claim—

The combination, in a windmill, of the tower-cap, the movable rim mounted on the cap, and the spring interposed between lugs upon the cap and rim for cushioning the strain on the tower, substantially as specified.

WILLIAM D. NICHOLS.

Witnesses:

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