

(Model.)

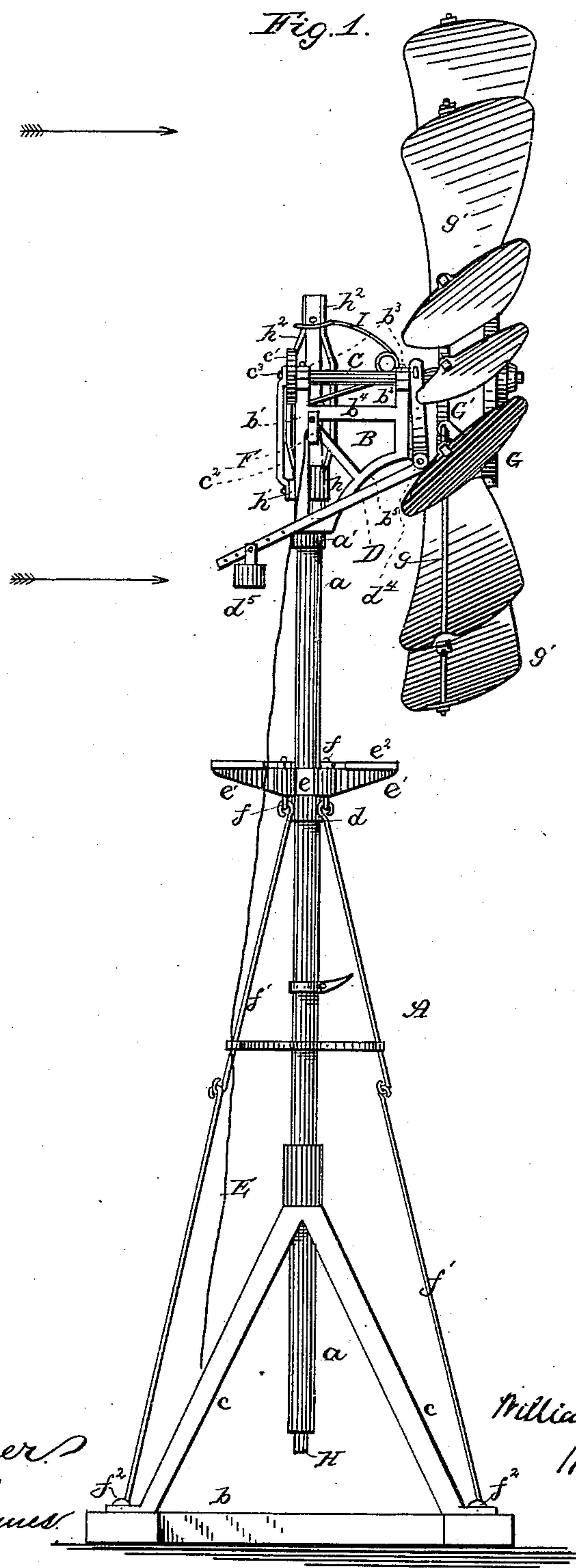
2 Sheets—Sheet.1.

W. N. BRYAN.

WINDMILL.

No. 259,476.

Patented June 13, 1882.



Witnesses:

J. W. Garner
W. S. D. Haines

Inventor:

William N. Bryan.
Howard A. Swin
his Attorney

(Model.)

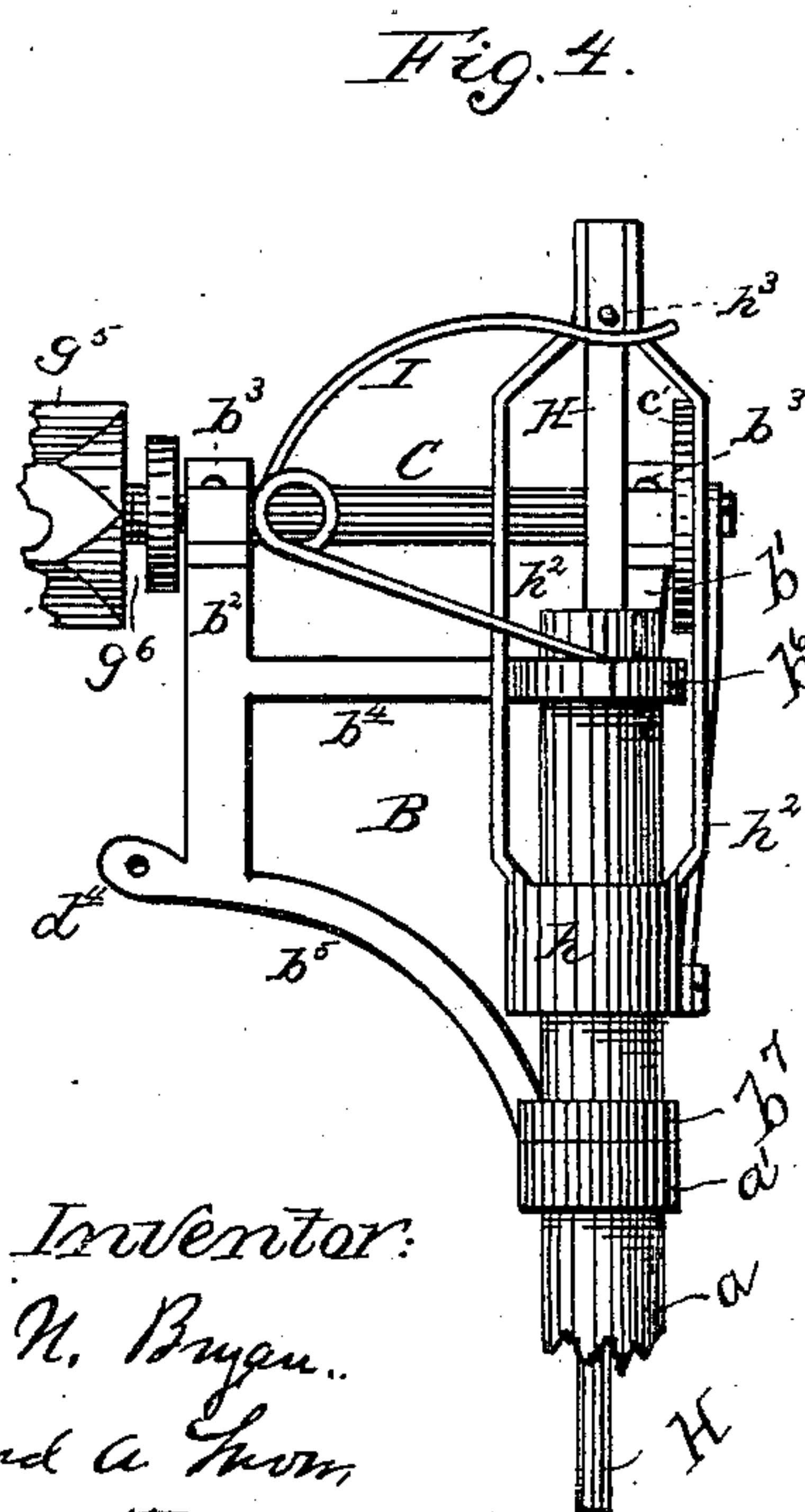
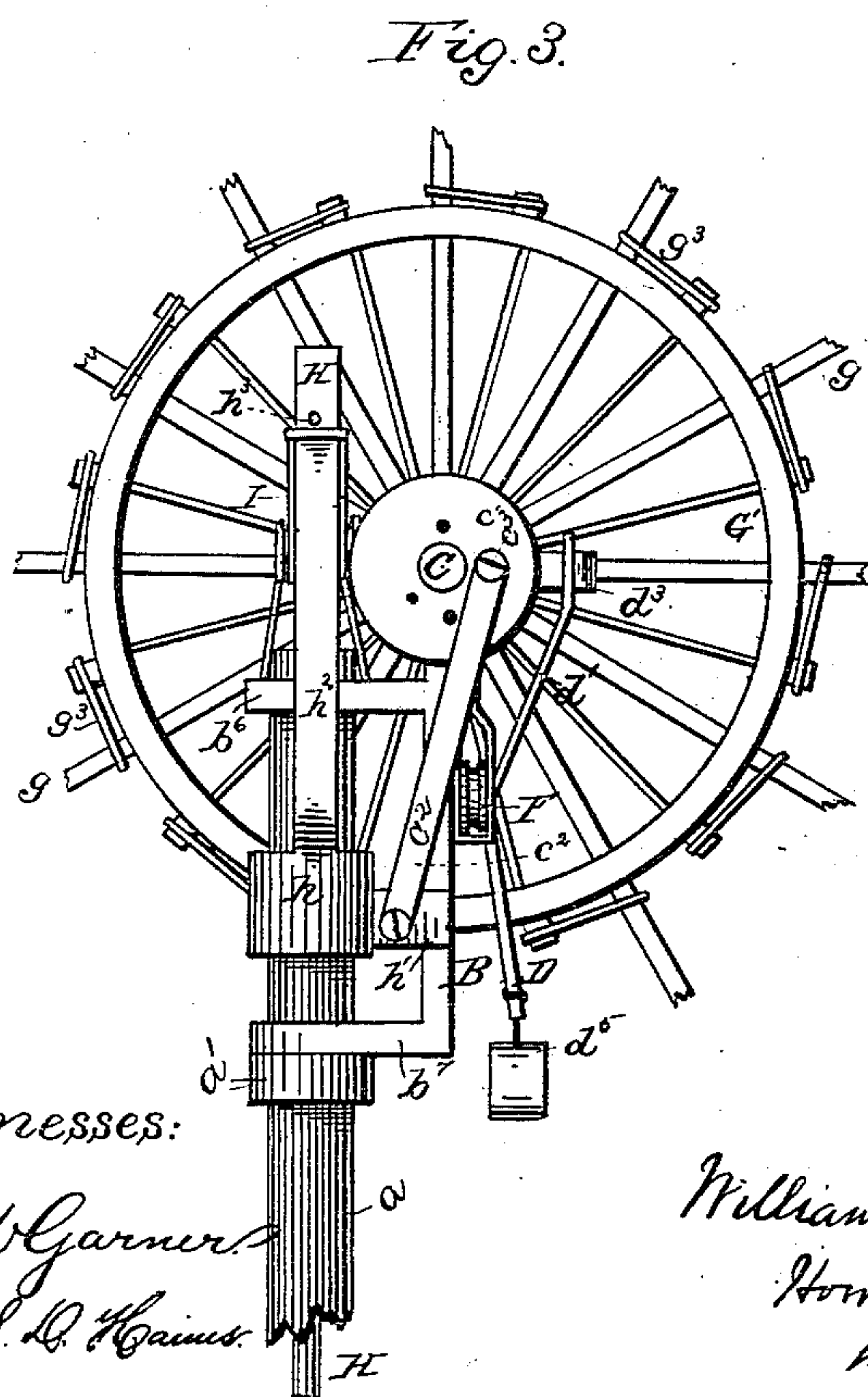
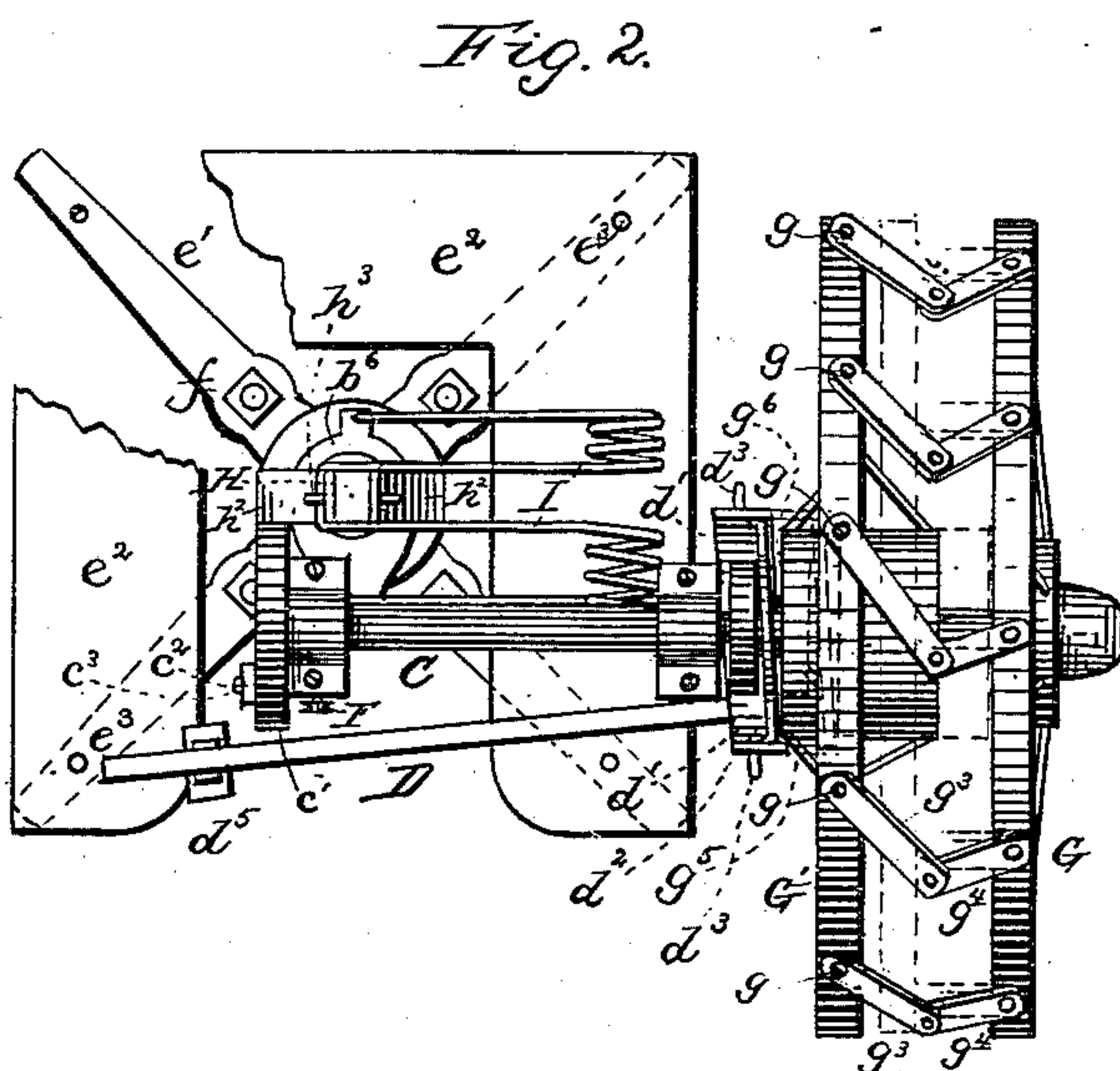
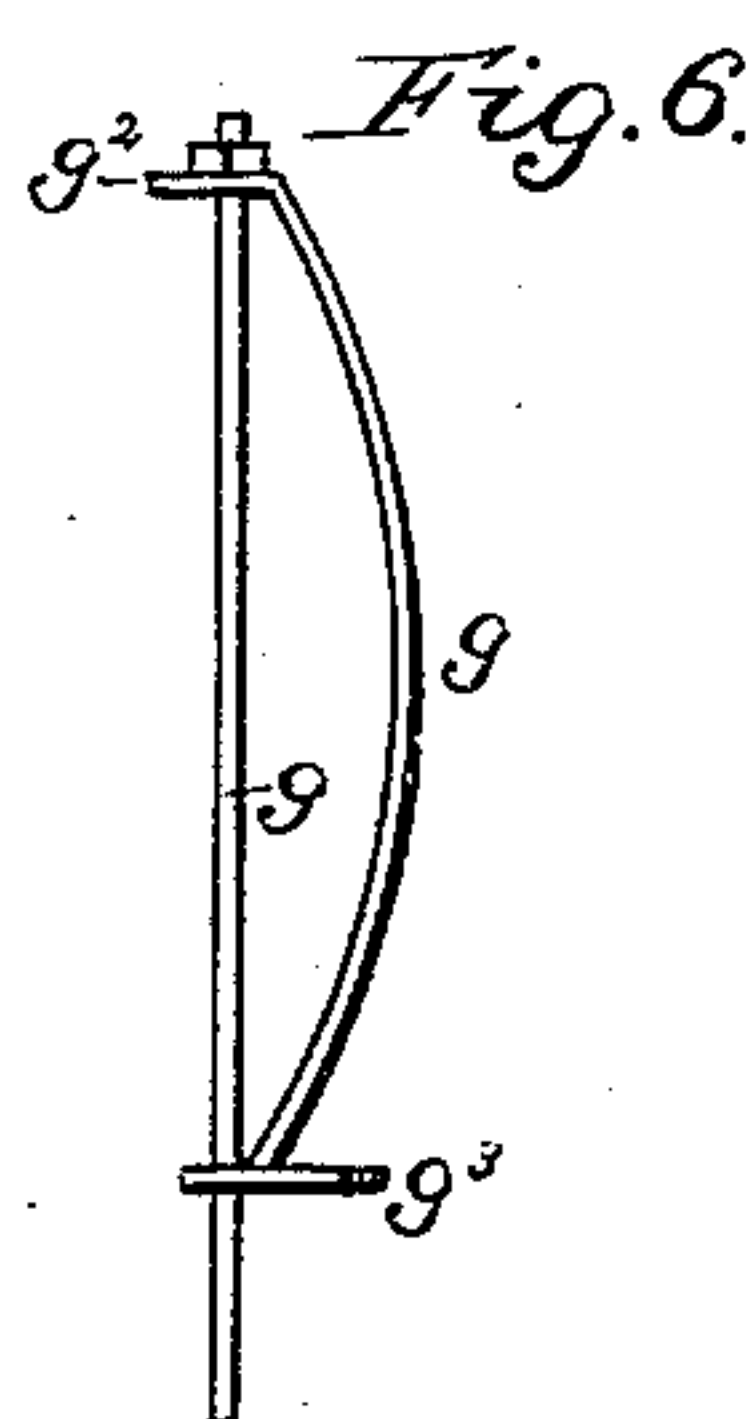
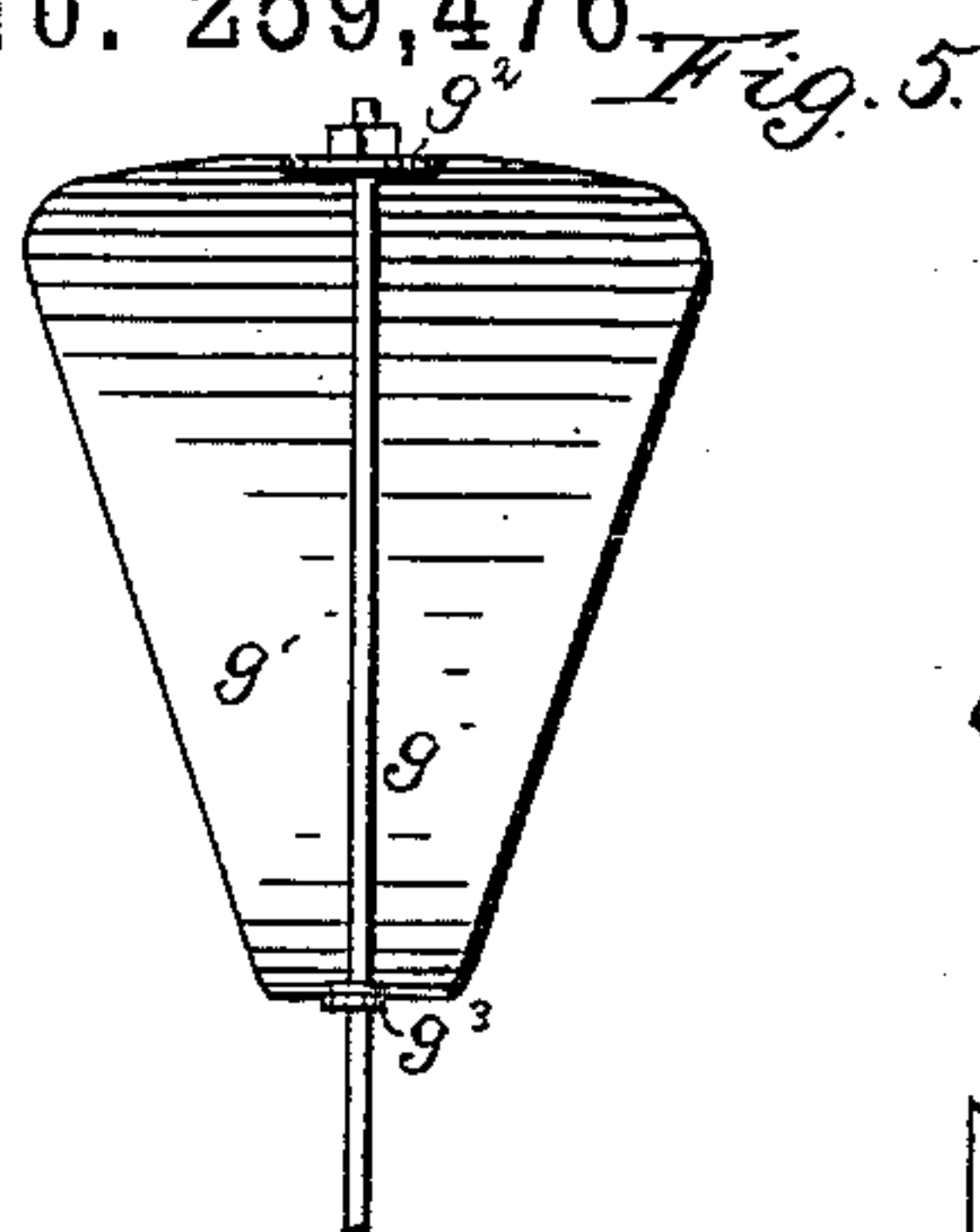
2 Sheets—Sheet 2.

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his attorney.

UNITED STATES PATENT OFFICE.

WILLIAM N. BRYAN, OF ADA, OHIO.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 259,476, dated June 13, 1882.

Application filed April 17, 1882. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM N. BRYAN, a citizen of the United States, residing at Ada, in the county of Hardin and State of Ohio, have invented certain new and useful Improvements in Windmills, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improvement in windmills; and it consists in certain improvements in the construction of the same which will be hereinafter fully described, and pointed out in the claims.

The accompanying drawings fully illustrate my invention.

Figure 1 is a side elevation of my invention. Fig. 2 is an enlarged top plan view of the fan-shifting mechanism. Fig. 3 is a rear elevation. Fig. 4 is a side elevation from the opposite side shown in Fig. 1. Figs. 5 and 6 are detailed views of one of the fans.

A represents the tower upon which the mechanism is supported, consisting of the tube *a*, secured to the base-frame *b* by means of the angle-irons *c*, forming feet, as shown. At about midway on the tube *a* is a collar, *d*, upon which rests the casting or spider *e*, having a hole centrally located for the insertion of the tube *a*, and radiating arms *e'*, adapted to support the platform *e''*, the said platform being secured thereto by suitable bolts, *e'''*. Near their inner ends the arms *e'* are perforated for the reception of the eyebolts *f*, to which are secured the braces *f'*, which extend downwardly and outwardly to the feet *c*, to which they are secured by the bolts *f''*, which fasten the feet to the base-frame. Near the upper end of the tube *a* is a second collar, *a'*, upon which rests the pivoted supporting-bracket B. This bracket consists of the vertical bars *b'* *b''*, provided at their upper ends with the bearings *b'''* for the shaft C, the bars being connected by the horizontal bar *b''''* and the curved bar *b'''''*. Bent at right angles to the bracket at the inner end, and forming integral parts thereof, are the ears *b''''''* *b'''''''*, which are perforated for the reception of the tube *a*, the lower one resting upon the collar *a'*. By means of these ears the bracket is pivoted upon the upper end of the tube.

To the outer end of the shaft C is rigidly secured the wheel G, near which is loosely

mounted a second wheel, G', of the same size. From the wheel G' radiate the arms *g*, to which the fans *g'* are pivoted. These fans are made of any thin light material, preferably of sheet metal, so as to be sufficiently strong to resist the action of the wind, and are curved as shown in detail at Fig. 6, being connected to the arms *g* at the top by means of the ears *g''* and at the bottom by means of the flat rods *g'''*, which are rigidly secured to the bottom of the fans at right angles thereto, and are pivoted at their inner ends to the rod *g*, and are pivoted at their outer ends to the rods *g''''*, which rods *g''''* are in turn pivoted to the periphery of the wheel G, as shown in Fig. 2. By thus pivoting the fans they can be made to assume any desired angle to the wind by sliding the wheel G' in and out upon the shaft C, as will be readily understood. This adjustment is accomplished automatically by means of the mechanism now to be described. The wheel G' is provided with an inwardly-projecting hub, *g''''''*, provided with an annular groove, *g'''''''*. In this groove is the strap *d''*, having the projecting ends *d'''*, to which are pivoted the upper bifurcated ends, *d''''*, of the bent lever D, which is pivoted to the outer end of the bracket B at *d''''''*. The lower inner end of the lever D is weighted, as at *d'''''''*, and is controlled from the ground by means of the rope E, secured thereto, which passes over the pulley F, secured to the bracket B, and thence to the ground, within easy reach. By this construction a governor is provided for the wind-wheel that will effectually control it, and when it is desired to stop it this can be effected by pulling the rope and causing the lever D to turn the fans edgewise to the wind. Moreover, a rudder or vane is dispensed with, as, being pivoted upon the tube, the wheel will always keep itself before the wind, this being indicated by the arrows in Fig. 1 of the drawings.

H is the pump-rod, which passes up through the tube *a*, and is connected at the top with a sleeve, *h*, which has a bearing end, *h'*, in contact with the inner edge of the bracket B, against which it slides, this being necessary to cause the sleeve to turn with the bracket as the wind shifts. The sleeve *h* has its sides cut away at the upper portion, leaving only the two uprights *h''*, which uprights are bent

in and pivoted to the upper end of the pump-rod, as shown.

The motion of the wind-wheel is imparted to the pump-rod by means of the crank-disk c' , secured to the inner end of the shaft, and the connecting-rod c^2 , pivoted to the disk at its upper end and to the end h' of the sleeve h at its lower end. The crank-disk has a series of holes at different distances from the center, into which the end of the pivoting-pin c^3 is adapted to enter, by which means the length of the stroke of the pump-rod can be controlled so as to fit it for any make of pump.

In order that the weight of the pump-rod may be no impediment to the motion of the wheel, I provide a spring, I , bent in the shape shown in Fig. 4, the upper end of which bears under the projecting pin h^3 , with which the pump-rod is provided near its upper end, the lower end of the spring being fastened to the top of the ear b^6 of the bracket B . This spring is just of sufficient length to support the weight of the pump-rod, the downward stroke of the rod bearing against the tension of the spring, which assists in raising it up in its upward motion, thus equalizing the resistance to the wind-wheel at all points of the stroke.

Having thus described my invention, I claim—

1. The tower A , consisting of the tube a , through which the pump-rod operates, the tube being supported by the angle brace-irons c and the braces f' , the said braces f' being secured to the spider e , having radial arms e' , for supporting the platform, and resting upon the collar d , rigidly secured to the tube, substantially as shown.

2. The wind-wheel consisting of the wheel G , rigidly secured to the shaft C , and the second wheel, G' , loosely mounted and adapted to slide on said shaft, and being provided with the pivoted radial arms g , having the fans g' secured thereto, the arms g , having the rods g^3 rigidly secured to them at the inner ends of

the fans, the outer ends of the rods g^3 being pivoted to the rods g^4 , which are pivoted to the wheel G , whereby the rods g , carrying the fans, may be turned so as to present the fans at any desired angle to the wind by sliding the wheel G' in or out upon the shaft C , substantially as described.

3. The wind-wheel consisting of the wheel G , rigidly secured to the shaft C , journaled upon the pivoted bracket B , and the second wheel, G' , loosely mounted and adapted to slide upon the shaft C , the said wheel G' being provided with the hub g^5 , having the annular groove g^6 , in combination with the strap d^2 , the ends of which are pivoted in the bifurcated ends of the weighted bent lever D , pivoted to the bracket B , and controlled by the rope F , the wheel G' being provided with the pivoted radial arms g , having the rods g^3 rigidly secured to them at the inner ends of the fans, the outer ends of the rods g^3 being pivoted to the rods g^4 , which are pivoted to the wheel G , whereby the fans may be turned at any desired angle to the wind by raising or lowering the inner end of the weighted lever D , substantially as shown and described.

4. The pump-rod H , extending through the tube a , secured at its upper end to the sleeve h , which encircles the upper end of the tube a , the said sleeve being provided with a bearing-lug, h' , adapted to slide up and down against the inner edge of the bracket B , motion being imparted to the sleeve h , and through it to the pump-rod, by means of the connecting-rod c^2 and crank-disk c , secured to the inner end of the shaft C , all combined to operate substantially as specified.

In testimony whereof I hereby affix my signature in presence of two witnesses.

WILLIAM NEPOLEON BRYAN.

Witnesses:

J. M. BODGE,

DANIEL GRINER.