

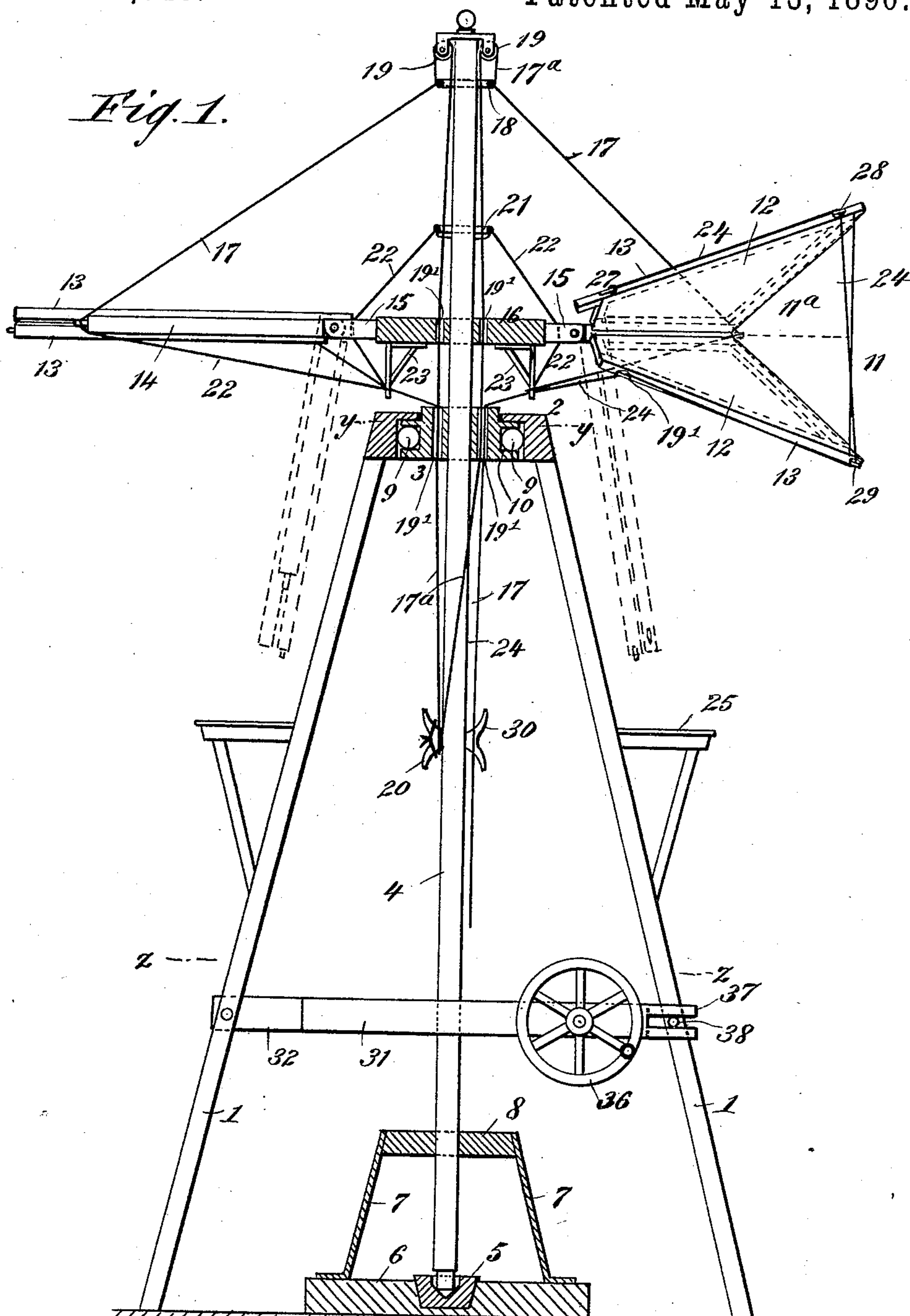
(No Model.)

2 Sheets—Sheet 1.

J. E. GARCIA-SANCHEZ.
WINDMILL.

No. 427,846.

Patented May 13, 1890.



WITNESSES:

Don Twitchell
Speedy

INVENTOR:

J. E. Garcia-Sanchez

BY

Murray
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

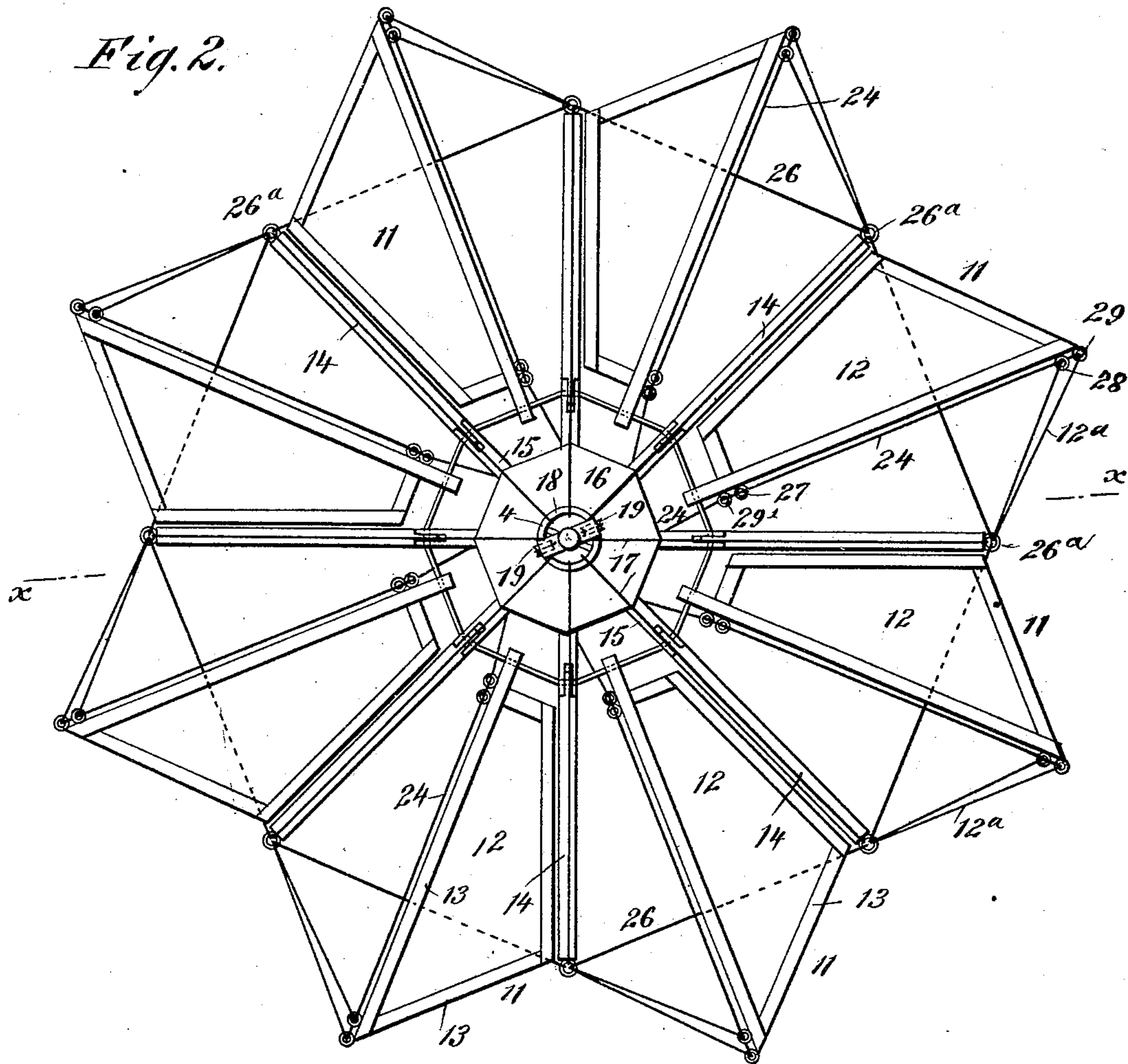
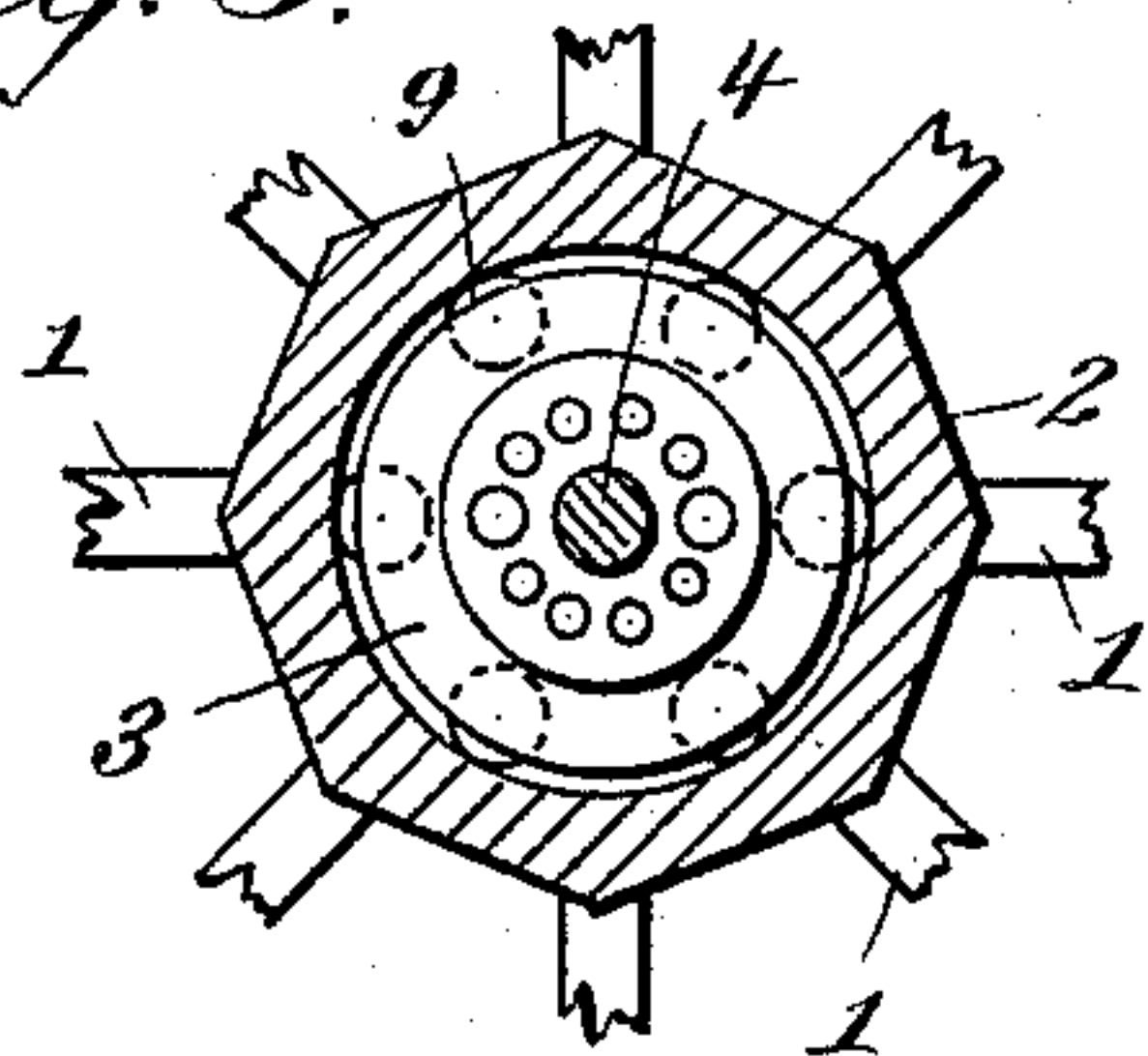


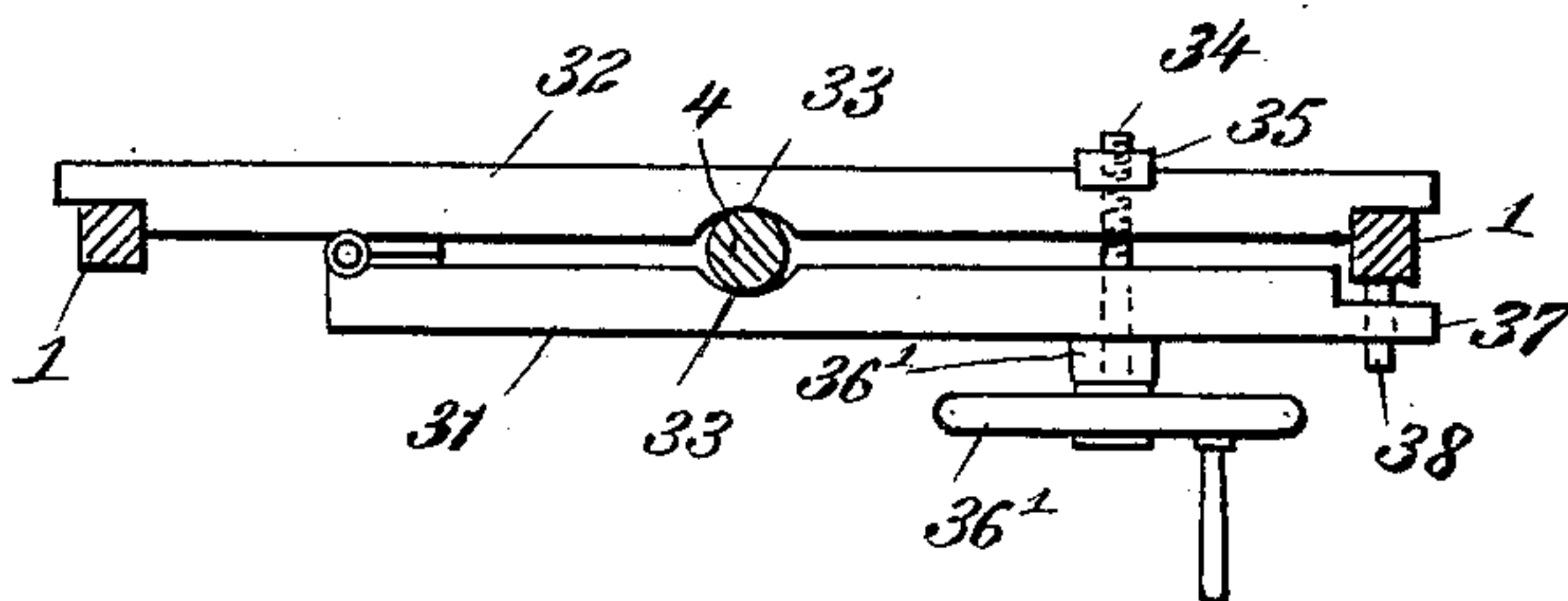
Fig. 3.



WITNESSES

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Fig. 4.



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UNITED STATES PATENT OFFICE.

JULIO E. GARCIA-SANCHEZ, OF NEW YORK, N. Y.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 427,846, dated May 13, 1890.

Application filed October 1, 1889. Serial No. 325,654. (No model.)

To all whom it may concern:

Be it known that I, JULIO E. GARCIA-SANCHEZ, of Venezuela, South America, now residing in the city, county, and State of New York, have invented a new and Improved Windmill, of which the following is a full, clear, and exact description.

This invention relates to windmills, and has for its object to provide a windmill which will be effective in operation, and the wings of which may be lowered and closed when not required for use and automatically opened by the wind when raised into position for use.

The invention also has for its object to provide a windmill having wings so constructed as to be effectually acted upon by the wind.

The invention further has for its object to provide a windmill in which the wings may be lowered, so as to be brought within reach for repair or other purposes, and, finally, in which also the windmill may be stopped and held from moving or its degree of movement regulated.

The invention consists in a windmill and in details thereof, constructed and arranged as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a view in elevation of the invention, shown as partly in vertical section on the line xx , Fig. 2. Fig. 2 is a plan view thereof, showing the wings unfolded. Fig. 3 is a horizontal section on the line yy of Fig. 1; and Fig. 4 is a horizontal section on the line zz of Fig. 1.

In the construction of this invention the frame of the windmill is formed of uprights 1, connected to and supporting a top piece 2, in which is located a rotary bearing 3, mounted on a vertical rotary shaft 4, extending above the top of the frame to support the wings of the windmill and resting at its lower end in a socket-block 5, mounted in a base-piece 6, upon which rest uprights 7, connected by a top piece 8. The shaft 4 extends through and has a bearing in the piece 8. The friction of the rotary bearing 3 in the top piece 2 is reduced by means of anti-friction balls 9, located in a circular groove 10 in the bearing 3,

opening against the inner wall of the top piece 2.

11 are the wings of the windmill, consisting of the folding tapering sections 12, formed of canvas stretched on bars or rods 13, arranged in pairs and hinged to bars 14, which in turn are hinged or pivoted to swing vertically in the projections or arms 15 of a block 16, secured on the shaft 4 above the bearing 3. The outer ends of the wings 11 are closed by canvas sections 11^a. The wings 11 are supported and raised and lowered by means of cords 17, extending from the outer end of the bars 14 upward to and secured to a ring 18, movable vertically on the shaft 4, and from the ring 18 cords 17^a extend over pulleys 19 at the top of shaft 4 and down through holes 19' in block 16 and the bearing 3, and are secured to cleats 20 on the shaft 4. To prevent the wings from being raised above the horizontal, cords 22 are attached to the outer ends of the bars 14 and extend downward and inward to and through depending brackets 23, thence upward through the arms 15 to an attachment with a ring 21, fixed to the shaft 4 above the block 16. The wings 11 may be lowered to a suspended position on the arms 15, as shown in dotted lines in Fig. 1, by releasing the cords 17^a. When it is not desired to use the wings 11, they may be folded by means of cords 24, each cord being fastened at one end to a cleat or staple 27 on the inner end of the outer side bar 13 of the upper section 12 of a wing 11 and extending along the same to and through a ring 28 at its outer end, from thence across to a ring 29 on the outer end of outer bar of the other section 12, along said bar to and through a ring 29' on the inner end of the bar, and through a hole 19' in bearing 3 to a cleat 30 on shaft 4, where the cords 24 may be secured. A cord 26 extends from arm to arm around the arms 14 to stay the same, being secured to eyes 26^a on the ends of the arms, and to better enable the sections 12 to sustain the stress of the wind guy-cords 12^a are attached to the eyes 26^a on the arms 14 and extend to the eyes 28 and 29 on the outer corners of the sections 12 of the adjacent wing 11. In order to have ready access to the lowered wings 11, a platform 25 is mounted on the uprights 1 at a suitable distance below the top of the frame.

When it is desired to use the windmill, the wings 11 are raised to an elevated and horizontal position by means of the cords 17^a, which are secured to the cleat 20.

- 5 In use the cords 24, fastened to the cleat 30, are left sufficiently slack, so that the folded sections 11 of the wings 12 will be permitted to be opened by the wind and limit the unfolding of the sections, so as to present
10 two oblique or inclined surfaces. It will be seen that by drawing on the cords 24 the wings will be folded, and may be held in that position when it is desired not to have the windmill in operation.
- 15 In order to stop the windmill or regulate the speed of shaft 4, a suitable brake is employed, and, as here shown, consisting of a bar 31, hinged to a bar 32, extending between and secured to a pair of the uprights 1. The
20 bars 31 and 32 extend on both sides of the shaft 4, and have each a semicircular recess 33, through which the shaft 4 extends when the bar 31 is closed. To clamp the bar 31 against the shaft 4, a screw 34 is provided,
25 extending through the bars 31 and 32, and a nut 35 set into the bar 32, and having a hand-wheel 36, with a shouldered projection 36', which bears against the bar 31. The outer
30 forked end 37 of bar 31 moves over and is guided by a pin 38 in one of the uprights 1. By turning the wheel 36 and screwing or unscrewing the screw 34 the pressure of bar 31 upon the shaft 4 may be regulated and the
35 speed of the shaft 4 graduated or its movement entirely stopped. The windmill may be utilized by connecting or gearing shaft 4 with the mechanism to be driven.

By means of this invention a windmill is provided in which the friction of the vertical
40 shaft is diminished, so that the wings will be easily operated by the wind; the movement of the shaft may be stopped or its speed con-

trolled; and folding wings are provided which may be automatically opened by the wind, can be readily closed when not required for
45 use, and be readily and effectively handled for inspection and repair.

By having horizontal wings formed with oblique sections, as hereinbefore described, the wind will effectively act on the wings. 50

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

1. A windmill constructed with a vertical shaft and horizontal arms, and wings adapted
55 to be raised and lowered on the arms, in combination with means, as cord 17, ring 18, pulleys 19, and cord 17^a, for raising and lowering said wings, substantially as described.

2. A windmill comprising a vertical shaft 60 provided with horizontal arms having wings composed of folding sections pivoted thereto and adapted to swing vertically therein, in combination with means, as described, for raising and lowering said wings, and with
65 means, as side bars 13, cord 24, staple 27, and rings 28 29 29', for folding the sections of said wings, substantially as described.

3. A windmill consisting, essentially, of a frame having a vertical shaft mounted there-
70 in, said shaft being provided with horizontal arms having wings formed in folding sections pivoted thereto and adapted to swing vertically therein, means, substantially as described, for raising, lowering, and folding said
75 wings, anti-friction ball-bearings for said shaft, and a suitable brake to regulate the speed of said shaft, all substantially as described.

JULIO E. GARCIA-SANCHEZ.

Witnesses:

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THOMAS H. WHITNEY.