

3 Sheets—Sheet 1.

No. 551,410.

Patented Dec. 17, 1895.



561

Witnesses

Harry L. Amer.

J. H. Pilgr

By *His* Attorneys.

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(No Model.)

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F. P. SHEPARD.
WINDMILL.

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FIG. 2.

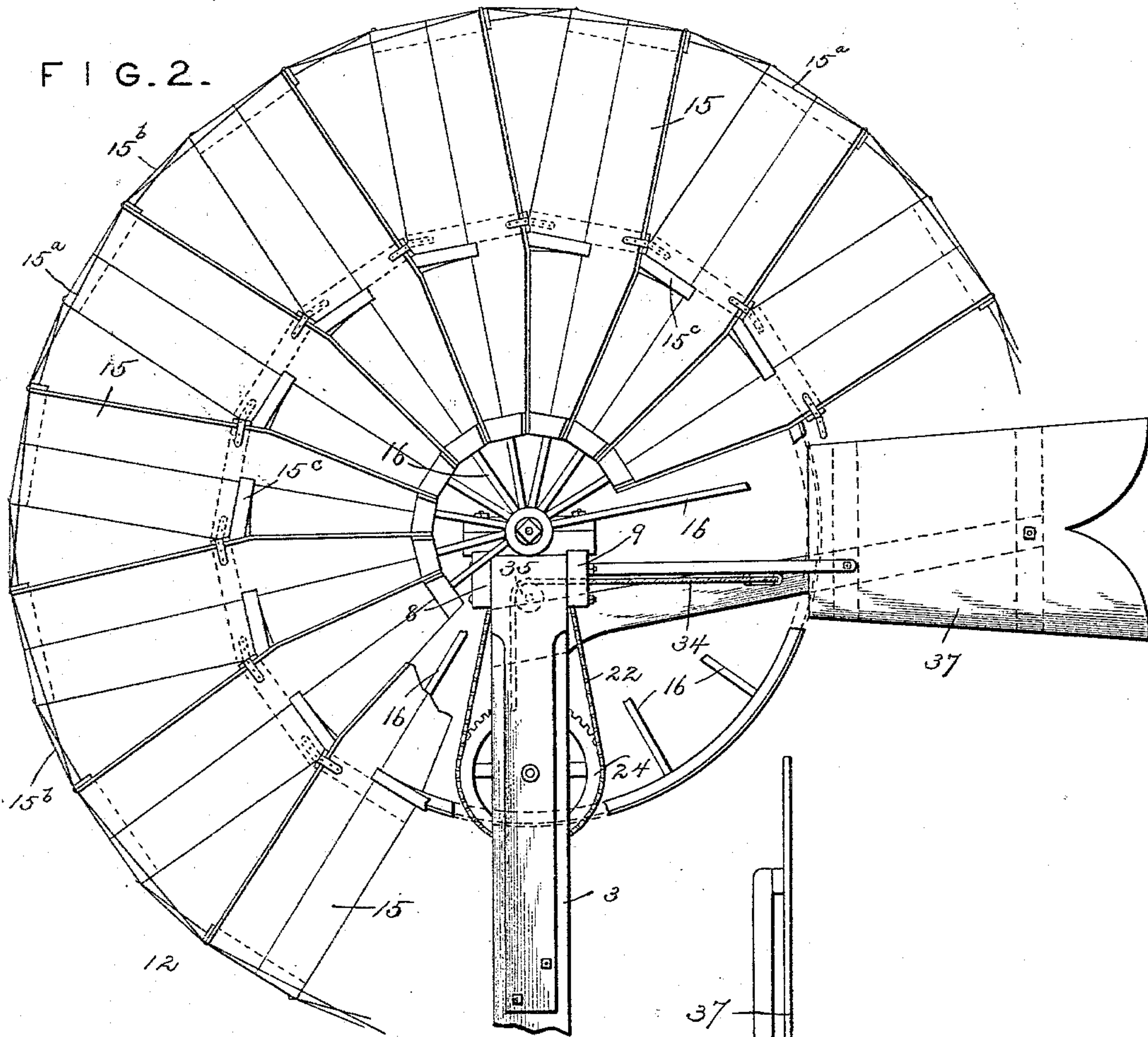
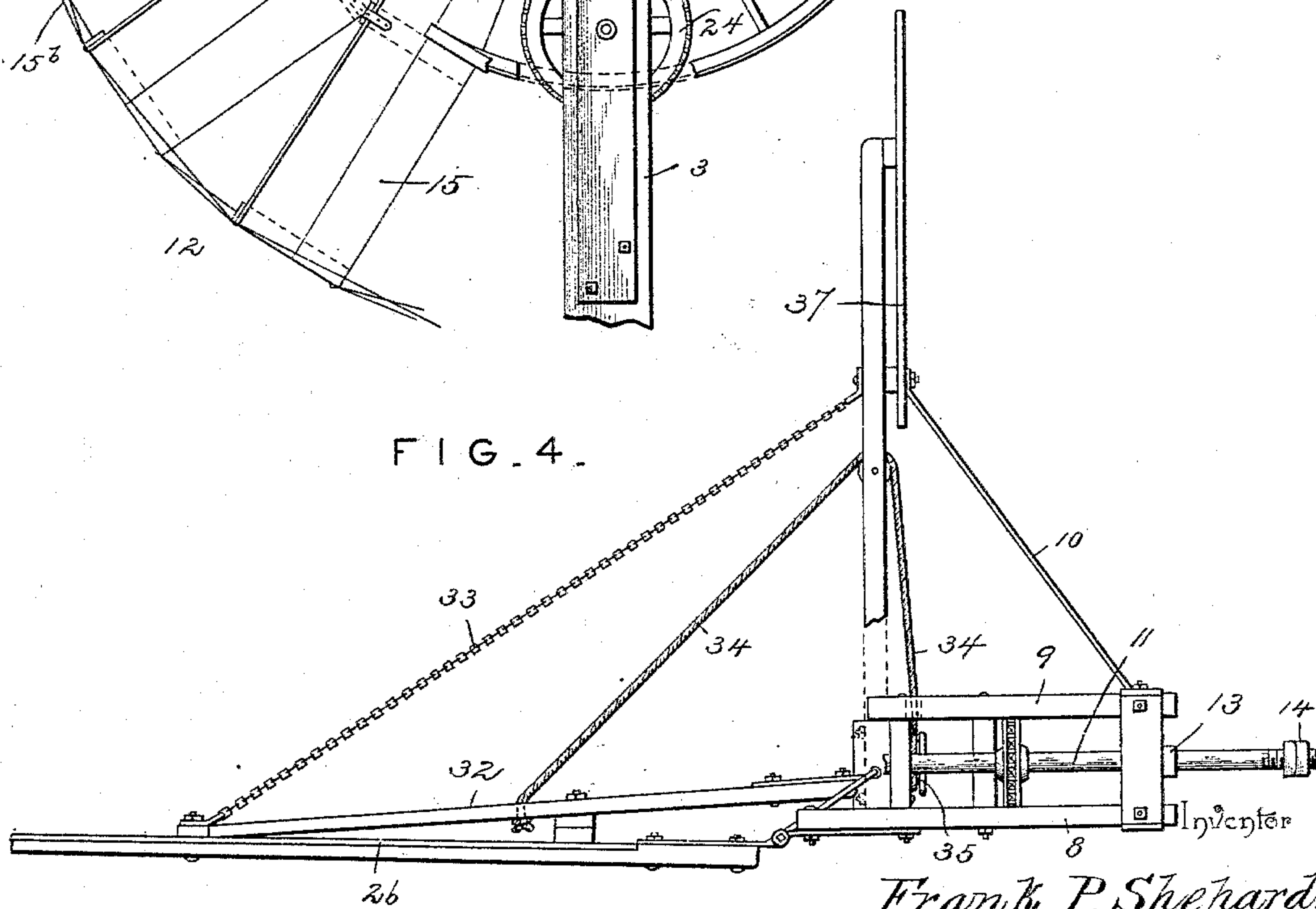


FIG. 4.



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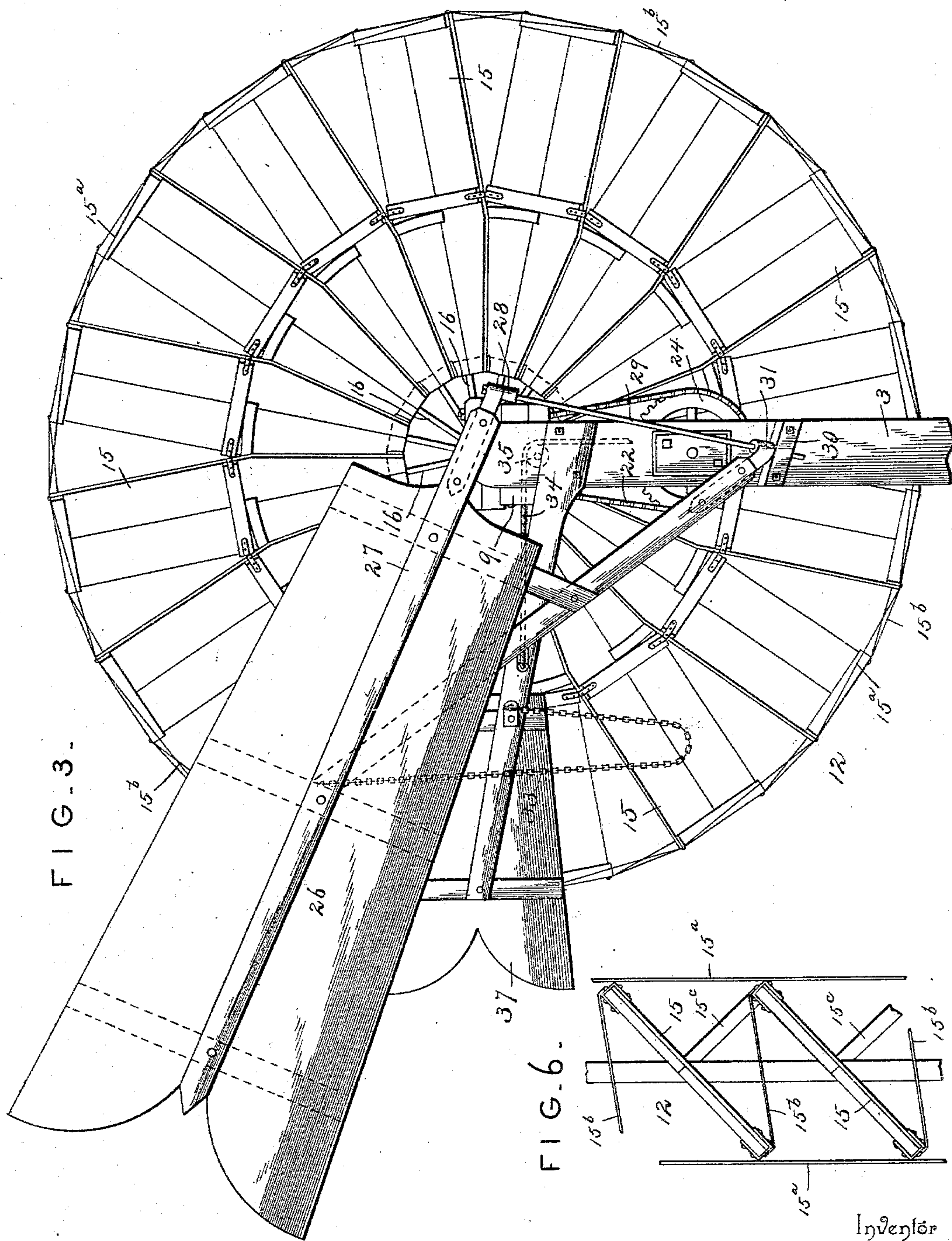


FIG. 3.

FIG. 6.

Inventor

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UNITED STATES PATENT OFFICE.

FRANK P. SHEPARD, OF EDMOND, OKLAHOMA TERRITORY, ASSIGNOR OF TWO-THIRDS TO CHARLES E. EDGERTON AND HORACE J. SHAVER, OF SAME PLACE.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 551,410, dated December 17, 1895.

Application filed July 5, 1895. Serial No. 554,997. (No model.)

To all whom it may concern:

Be it known that I, FRANK P. SHEPARD, a citizen of the United States, residing at Edmond, in the county of Oklahoma and Territory of Oklahoma, have invented a new and useful Windmill, of which the following is a specification.

The invention relates to improvements in windmills.

The object of the present invention is to improve the construction of windmills, and to provide a simple one, which may be cheaply and conveniently manufactured, and in which the vane will operate as a weight for holding the wind-wheel into the wind.

The invention consists in the construction and novel combination and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claim hereto appended.

In the drawings, Figure 1 is a side elevation of a portion of a windmill constructed in accordance with this invention. Fig. 2 is a front elevation of the same. Fig. 3 is a side elevation, the wind-wheel being thrown out of the wind. Fig. 4 is a plan view. Fig. 5 is a detail sectional view, illustrating the manner of journaling the rotary standard or support at the top of the tower. Fig. 6 is a detail view, illustrating the manner of bracing the blades of the wind-wheel.

Like numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a rotary standard or support, disposed vertically, and journaled in the upper portion of a tower 2, and adapted to rotate therein, to perform the function of a turntable. The rotary support or standard is composed of parallel sides 3, connected at their lower ends by an interposed block 4, and depending from the block is a tubular journal or pivot 5, which is arranged within a suitable bearing of the tower 2, a washer 6 and a collar 7 being interposed between the bottom of the block 4 and the supporting portion of the tower 2, to lessen the bearing-surface, to decrease the friction, and to prevent wear of the parts. The upper ends of the sides 3 of the rotary support or standard are connected by horizontal bars 8 and 9,

which are connected by suitable cross-pieces, and which are supported by an inclined brace 10; and the bars 8 and 9 and their connecting cross-pieces form a frame at the top of the rotary standard or support to receive a wind-wheel shaft 11.

The wind-wheel shaft 11 is disposed horizontally, and has mounted on its outer portion a wind-wheel 12, which is secured between an inner collar or flange 13 and a pair of nuts 14, one of the nuts operating as a jam-nut to prevent the other from accidentally unscrewing.

The wind-wheel, which may be of any desired configuration, may be conveniently constructed by mounting blades 15 on a light vehicle-wheel 16. A blade is preferably arranged at each spoke of the vehicle-wheel 16, and is composed of two longitudinal sections connected by cleats and located adjacent to the spokes at opposite sides of the rim or felly, and the blades are set at the proper angle and are supported by connecting-braces 15^a and 15^b. The transverse cleats which connect the sections of the blades are located at the inner and outer ends thereof, and also at the centers of the blades at the periphery of the wheel 16. The braces 15^a and 15^b are constructed of strap iron or metal. The braces 15^b are arranged at the outer ends of the blades and are disposed transversely of the wheel extending from the outer edge of one blade to the inner edge of an adjacent one, and the other braces 15^a connect the ends of the blades and are arranged at the periphery of the wheel 12, extending entirely around the same at opposite sides thereof. The blades are also connected by short braces 15^c, each extending from the outer edge of one blade to the center of an adjacent blade and located adjacent to the rim of the vehicle-wheel.

In order to enable the support or standard 1 to rotate frictionlessly at the top of the tower, which is provided with a circular opening 17, an annular series of rollers 18 are provided. The rollers are disposed vertically and bear against the top of the tower at the edge of the circular opening 17, and are journaled in suitable bearings, preferably formed by upper and lower blocks 19, secured to the

outer faces of the sides 3, and horizontal bars 20 interposed between the sides 3 and projecting beyond the same, as shown.

The horizontal wind-wheel shaft carries a sprocket wheel or pinion 21, and is connected by a sprocket-chain 22 with a crank-shaft 23, and the latter has a sprocket-wheel 24 of greater diameter than the sprocket-pinion 21 to receive the chain 22. A suitable pump-rod is designed to be connected with the crank-shaft, as will readily be understood, and the horizontal bars 20 are provided with pump-rod openings 25.

The wind-wheel is held into the wind during the operation of the windmill by a vane 26, provided at its inner end with a centrally-arranged arm 27, provided with an eye, which is hinged to a corresponding eye 28 of the bar 8 by means of an inclined pintle 29, which extends a considerable distance below the vane and is mounted in a block or support 30. The vane 26 is provided at the lower end of the pintle-rod 29 with an eye 31, which is carried by a downwardly-extending brace 32, which inclines inward from the central portion of the vane.

The eyes of the vane and the standard or support are set at an inclination to conform to the disposition of the pintle-rod, and the latter inclines downward and inward from one end of the bar 8, the lower end of the pintle-rod not being disposed in the same vertical plane as the upper end, but being disposed nearer the center of the adjacent side 3 of the support. By this construction the vane 26 in swinging to a position parallel with the wheel is raised from the horizontal position which it occupies when the windmill is in operation to an inclined position, as clearly shown in Fig. 3 of the accompanying drawings, whereby it is necessary to lift the vane to throw the windmill out of the wind, thereby utilizing the weight of the vane for the purpose of holding the wind-wheel normally in the wind. The swinging of the hinged vane 26 away from the wind-wheel is limited by a stay-chain 33, which operates to prevent the vane swinging beyond the position at right angles to the wind-wheel.

The wind-wheel is thrown out of the wind by means of a rope or other connection 34, having one end attached to the vane and extending over a pulley 35, and having its other

end connected with the base of the tower by a wire 36, or the like. The wire passes through perforations of the bars 20, but any other form of connection may be employed for operating the windmill.

A supplemental rigid vane 37 is secured to the rotary standard or support, and is arranged parallel with the wind-wheel, to assist in throwing the wind-wheel out of the wind, and to cause this operation to be performed automatically when the force of the wind becomes too great for the windmill, and the speed of the windmill is governed by the weight of the vane, as will be readily understood.

It will be seen that the windmill is exceedingly simple and inexpensive in construction, that it is automatic in operation, and that the weight of the vane is employed for holding the wind-wheel into the wind.

Changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

What I claim is—

A windwheel comprising a vehicle wheel composed of a hub, spokes and a rim or felly connecting the outer ends of the spokes, a series of radially disposed blades, each consisting of two longitudinal sections having their inner portions arranged at opposite sides of the wheels adjacent to the spokes, the transverse cleats connecting the sections of the blades arranged at the ends thereof and at the periphery of the rim or felly, the annular braces 15^a arranged at the periphery of the windwheel and located at the side edges of the blades, the braces 15^b arranged at the outer ends of the blades and extending transversely of the wheel from the outer edge of one blade to the inner edge of the adjacent blade, and the short centrally arranged braces 15^c extending from the center of one blade to the outer edge of the adjacent blade, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

FRANK P. SHEPARD.

Witnesses:

G. H. CLASSEN,
R. THATCHER.