(No Model.)

2 Sheets—Sheet 1.

T. ROGERS.

WIND ENGINE.

No. 427,911. Patented May 13, 1890.

Fig. 1.

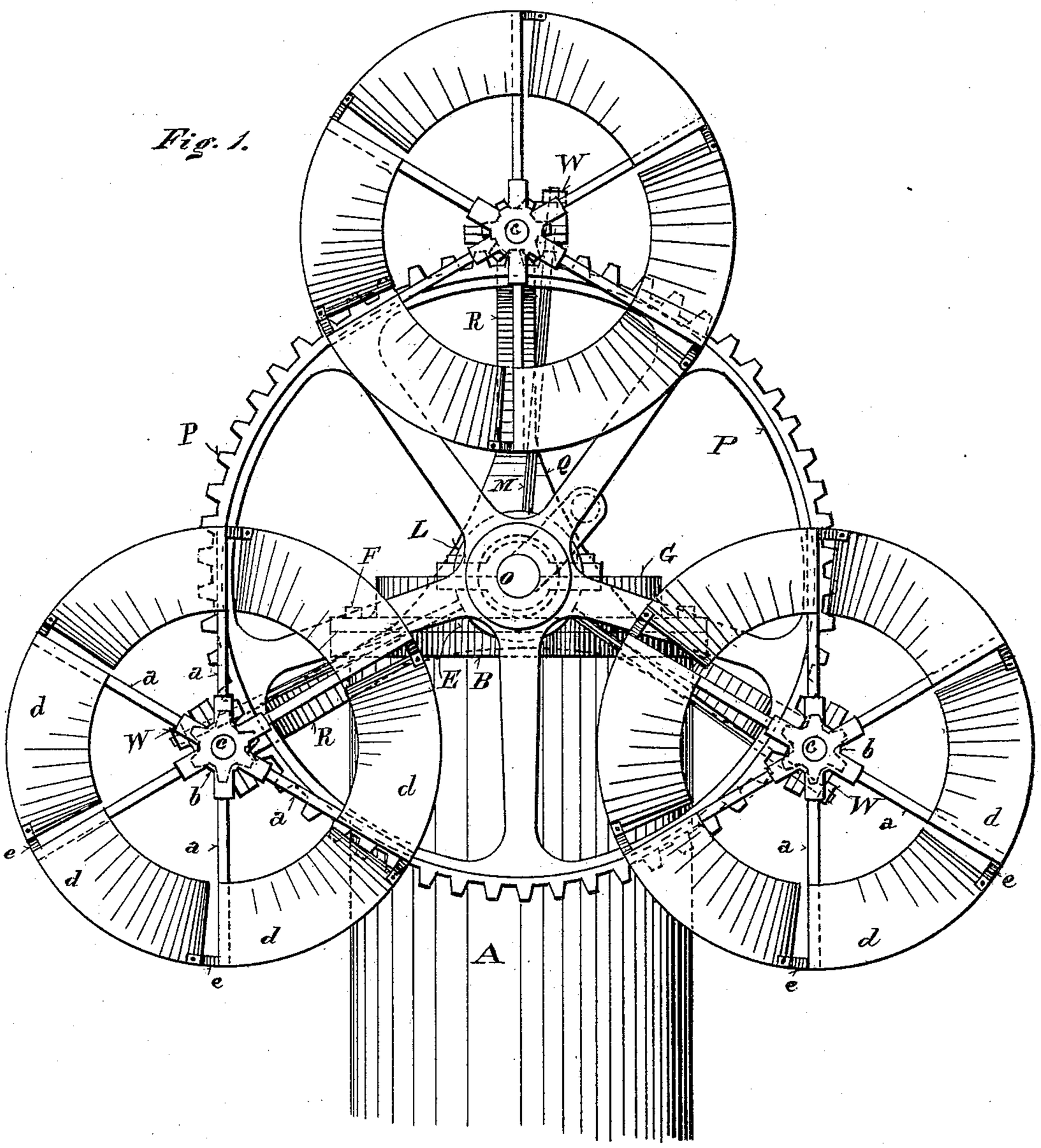
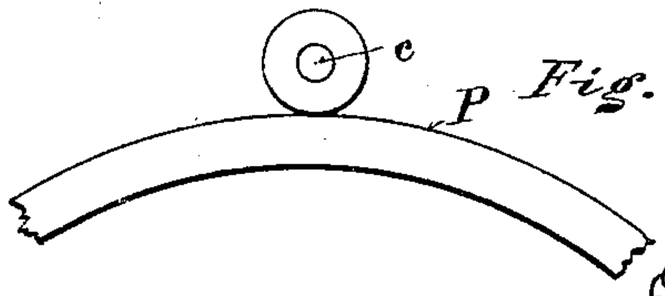


Fig. 6.



WITNESSES

H. M. Plaisted.

Warren Hull.

INVENTOR

Timothy Rogers,

By H. A. Toulmin.

His Attorney.

(No Model.) 2 Sheets—Sheet 2.

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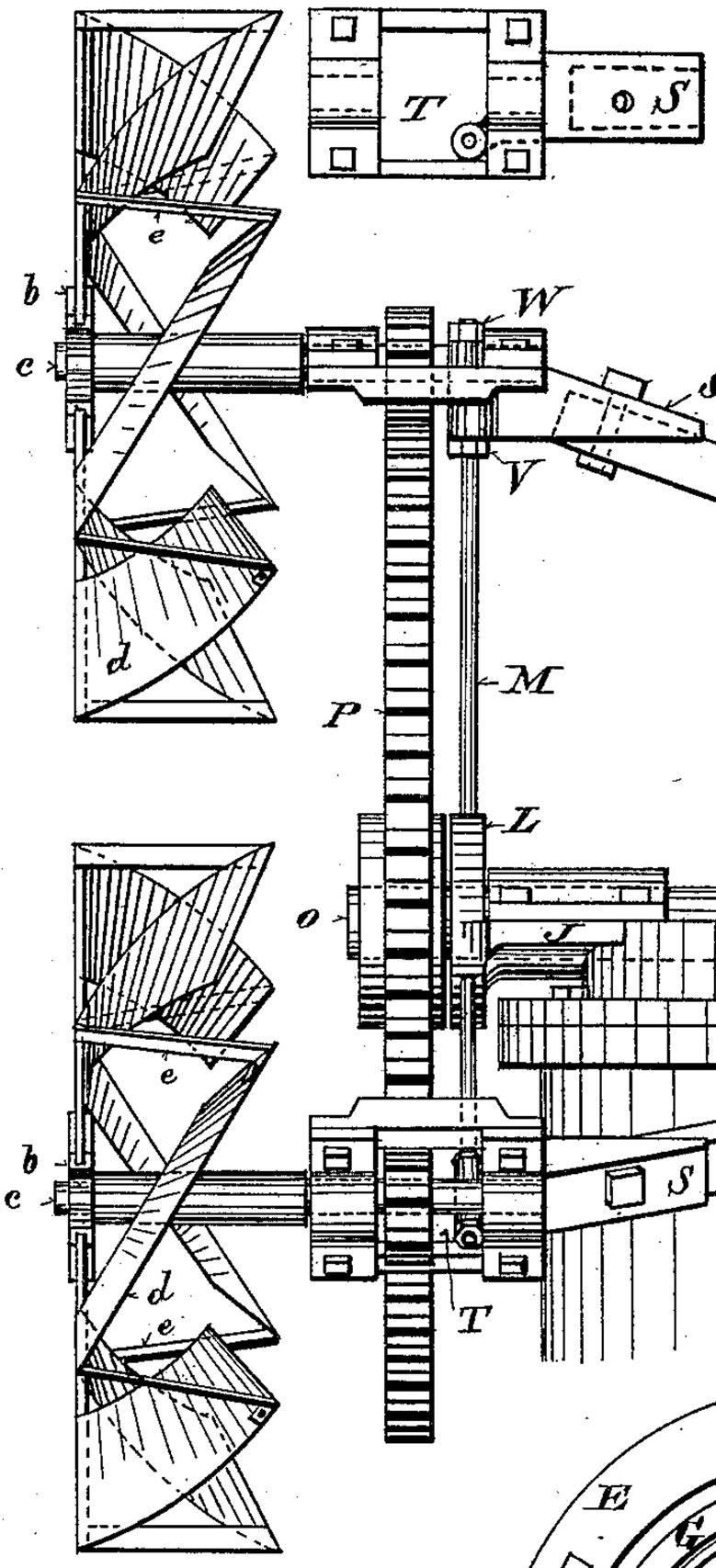

Fig. 4.

Fig. 2.

Fig. 3.

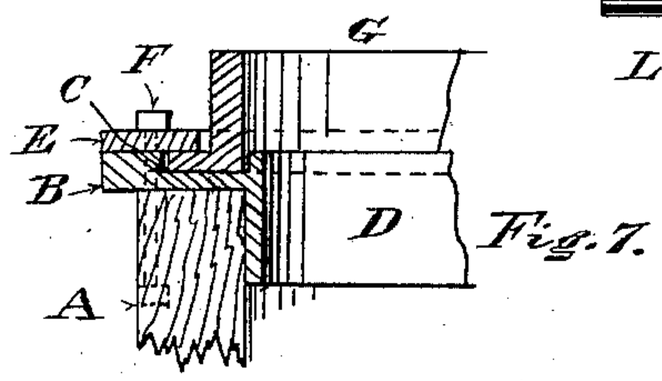

Fig. 7.

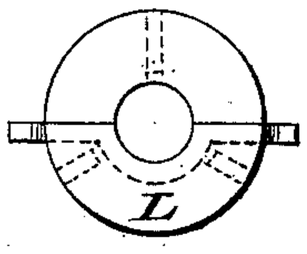

Fig. 5.

WITNESSES

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UNITED STATES PATENT OFFICE.

TIMOTHY ROGERS, OF SPRINGFIELD, OHIO, ASSIGNOR OF ONE-HALF TO HENRY VOLL, OF SAME PLACE.

WIND-ENGINE.

SPECIFICATION forming part of Letters Patent No. 427,911, dated May 13, 1890.

Application filed June 7, 1888. Serial No. 276,314. (No model.)

To all whom it may concern:

Be it known that I, TIMOTHY ROGERS, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Wind-Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in wind-engines; and the nature of the invention consists of a multiple-power wind-engine, the peculiarities of which will be more fully described, and pointed out in the claims.

The invention also consists of certain other details of construction hereinafter more fully described, and pointed out in the claims.

In the accompanying drawings, forming a part of this specification, and in which like reference-letters indicate corresponding parts, Figure 1 represents a front elevation of my improved wind-engine with the lower portion of the tower omitted; Fig. 2, a side elevation of the same; Fig. 3, a plan view of the turn-table and the driving-shaft carried thereon; Fig. 4, a detail plan view of one of the wind-wheel journal-boxes; Fig. 5, a detail elevation of the disk to which the radial bars of the box-frame are connected; Fig. 6, a detail view showing a modified form of back gearing between the master-wheel and the shaft of one of the wind-wheels, and Fig. 7 a sectional view on the line $x\ x$ of Fig. 3.

The letter A designates a cylindrical column constituting the upper portion of the tower, the lower portion of which may be of any approved construction, and to the column is secured a stout metallic plate B, having an annular recess or depression C therein, and constructed with a sleeve D and the letter E, a metallic disk adapted to fit upon the plate B, and to be secured thereto and to the column by bolts and nuts F, as also to partially cover the depression C. These devices constitute the fixed member of a turn-table. The movable member consists of a stout metallic circular shell G, having a flange at its lower end which fits within the depression C. The sleeve D fits within the shell G at its lower end, around which the shell turns when the wind shifts in its course. This shell carries journal-boxes I and J, which are either cast integrally with it or are otherwise secured to it. The upper half of the box J is constructed with a disk L, having a series of holes to which is secured a series of radial rods or bars M, the function of which will hereinafter appear.

The letter O designates a driving or crank shaft, and the letter P a wheel, which I term the "master" or "driving" wheel of the engine. The diameter of this wheel may vary according to the power required to be developed by the engine, or according to other circumstances, but usually it will be of about the proportion shown in the drawings. This wheel is engaged by one or more wind-wheels, and the manner of this engagement may be either through the medium of the cog-teeth and pinions, as seen in Figs. 1 and 2, or through the medium of the frictional contact between the master-wheel and friction-pulleys mounted upon the shafts of the wind wheel or wheels, as suggested in Fig. 6. I want to be understood in this connection as not in any manner confining myself to any one particular construction or arrangement so long as motion is transmitted from the shaft of the wind wheel or wheels to the master-wheel.

The letter Q designates a spider, which is secured by means of bolts or otherwise to the journal-box I, or which is otherwise conveniently supported, and to it are connected a number of oblique beams R, preferably of wood, and extending in a radial and forward direction to near the periphery of the master-wheel, where they are provided with some suitable form of journal-box, in the present instance cast-metal boxes having a sleeve S to receive the beams, and openings T for the passage of pinions on the wind-engine shafts, which shafts are mounted in these boxes. These boxes are secured and adjusted radially by means of the radial bars M already mentioned, and nuts V and W, which engage the inner and outer portions of the boxes, and by which they can be moved in a radial direction, which is permitted by the oblique position of the beams R, the object of which adjustment is to regulate the engagement between the pinions of the wind-wheel shafts and the master-wheel.

The wind-wheels are each composed of a suitable number of radial bars or spokes *a*, carried by a central hub *b*, mounted upon a shaft *c*, fitted to bearings in the boxes already referred to. To these spokes are secured one edge of the wings or sheets *d*, the other edge of the sheets being held at other than a right angle to the axis of the wheel by braces *e*, as more clearly seen in Fig. 1. This is a cheap and substantial form of wheel; but I do not wish to be understood as limiting myself to it, as other forms of construction may subserve my purposes equally as well.

Referring now to the operation of this engine, I would observe that the principal feature is the multiplication of the power of the wind as applied to useful purposes by the master-wheel compared with its force as received by the wind-wheels. This power is multiple in a double sense: first, by reason of the numerous wind-wheels which transmit their motion and unite all their force into the master-wheel, and, secondly, by reason of the diameter of the pinion of either wind-wheel compared to the diameter of the master-wheel.

It is a fact known in the art relating to wind-engines that a wheel of small diameter will revolve at a higher speed with a given wind-surface than a wheel of larger diameter with like or even greater wind-surface, and consequently I am enabled to secure a speed from the master-wheel sufficient for all practical purposes at the same time that I economize in the cost of the wind-wheels by making them of comparatively small diameter. Again, the wind-wheels being small in diameter, they are capable of breasting high winds without liability to destruction.

While I have illustrated three wind-wheels, it will be understood that one such wheel may be used and all the others discarded, and the same results as to power and speed attained, but in a less degree.

The term "gearing," as used in this specification, will be understood to mean and include all and every system of devices by which the motion of the wind-wheels is transmitted to the power-wheel, whether by direct and positive engagement or frictional contact. It is also to be understood that while I have shown one manner of supporting the skeleton-frame it may be otherwise supported; but a feature to be observed is the equal distribution of the weight of the power-wheel and said frame at diametrically-opposite sides of the turn-table. Again, the term "skeleton frame" is used as including a proper structure for the support of the shafts of the wind-wheels.

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

1. In a wind-engine, the combination, with a master-wheel, of one or more wind-wheels directly engaged therewith and turning on axes parallel to the axis of the master-wheel, whereby the power from the master-wheel is multiplied over the power exerted by the wind-wheels.

2. In a wind-engine, the combination, with a turn-table, a shaft, and a master-wheel having a gear periphery and mounted thereon and occupying a vertical plane, of a skeleton frame having members which extend near the periphery of said wheel, journal-boxes supported by said members, and wind-wheels having the shafts thereof mounted in said boxes, respectively, and a pinion carried by each of said shafts and meshing with the master-wheel.

3. In a wind-engine, the combination, with a master-wheel and one or more adjustable journal-boxes mounted near the periphery of said wheel, of a like number of wind-wheels mounted in said boxes and geared to said wheel, the adjustability of said boxes allowing of regulating the depth of the mesh or the degree of the contact between the master-wheel and the gearing.

4. In a windmill, the combination, with a turn-table, a shaft mounted upon the movable member thereof, and a comparatively large master-wheel and a skeleton frame supported by said member and said shaft at diametrically-opposite points on said table and at opposite ends of said shaft, of a crank near or at the middle of the shaft and at the center of said turn-table for transmitting the power of the master-wheel, and a suitable number of wind-wheels mounted in boxes carried by said frame and geared to said wheel, whereby the structure is balanced and the power is multiplied.

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

TIMOTHY ROGERS.

Witnesses:
JAS. H. MAHAN,
WM. G. WINDHURST.