

C. H. St. CLAIR.
Wind-Mills.

No. 151,932.

Patented June 9, 1874.

Fig. 1.

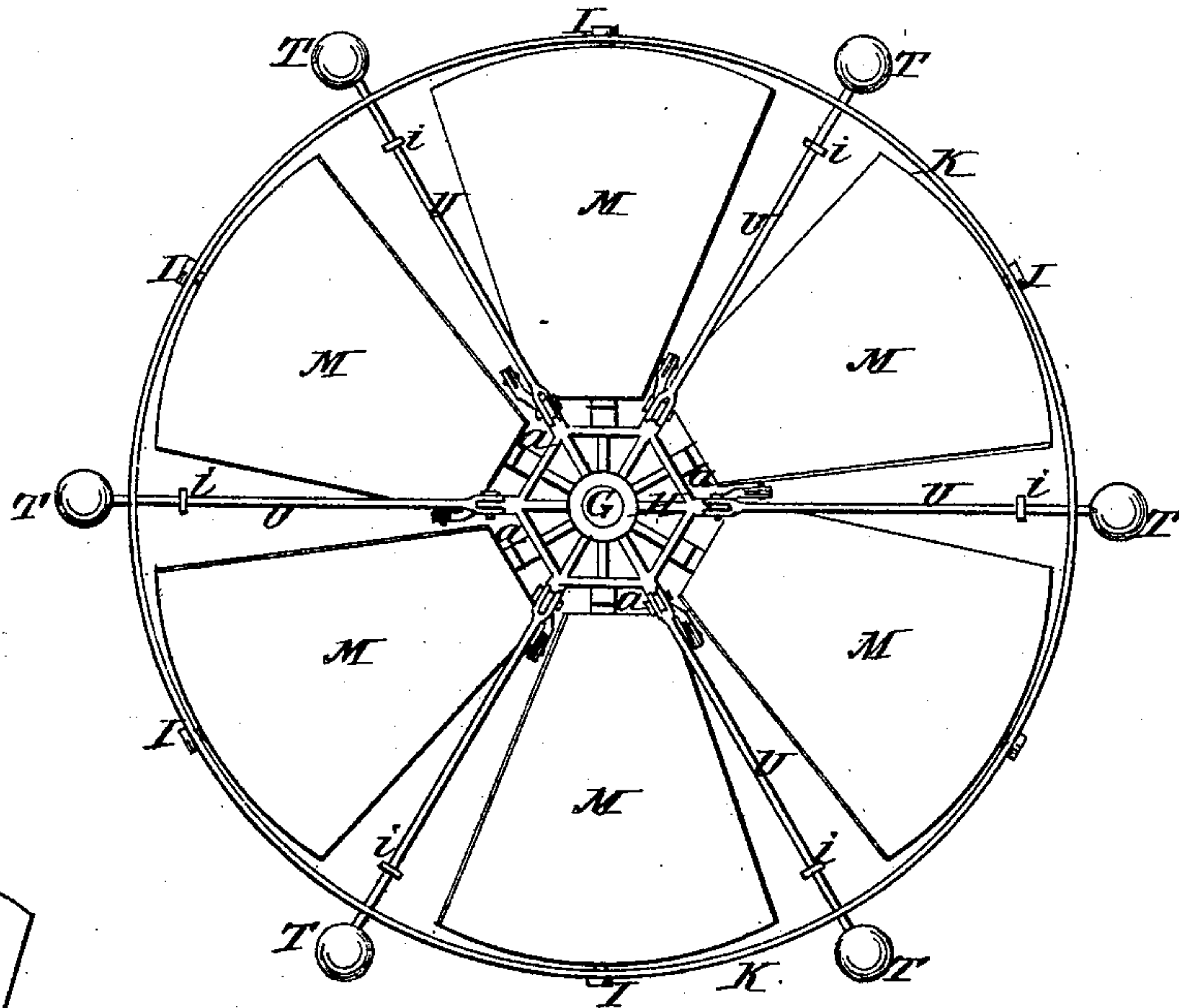
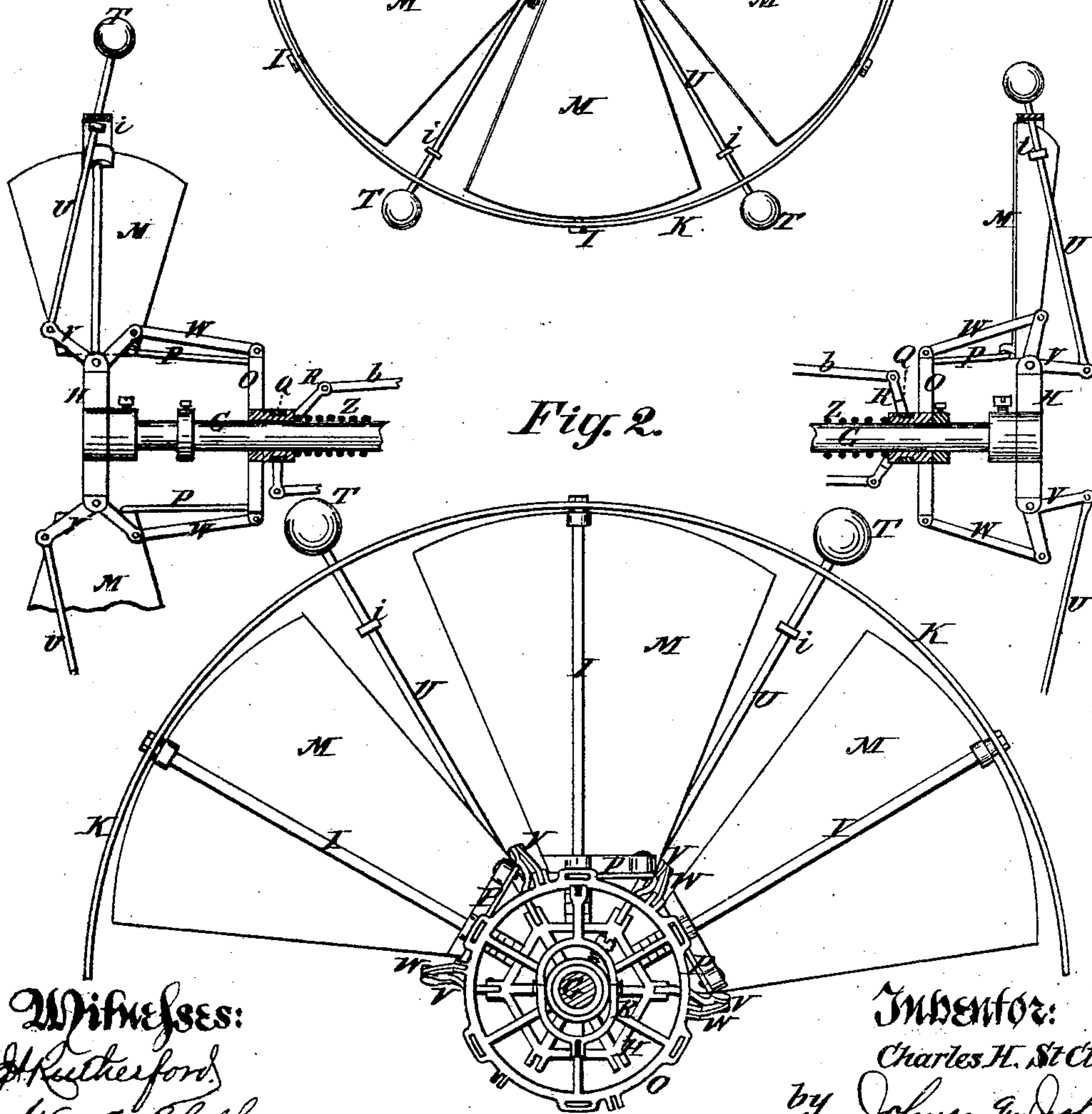


Fig. 2.



Witnesses:
J. Rutherford
Wm. G. Chaffee

Inventor:
Charles H. St. Clair,
by Johnson & Johnson
his Attorneys.

C. H. St. CLAIR.
Wind-Mills.

No. 151,932.

Patented June 9, 1874.

Fig. 3.

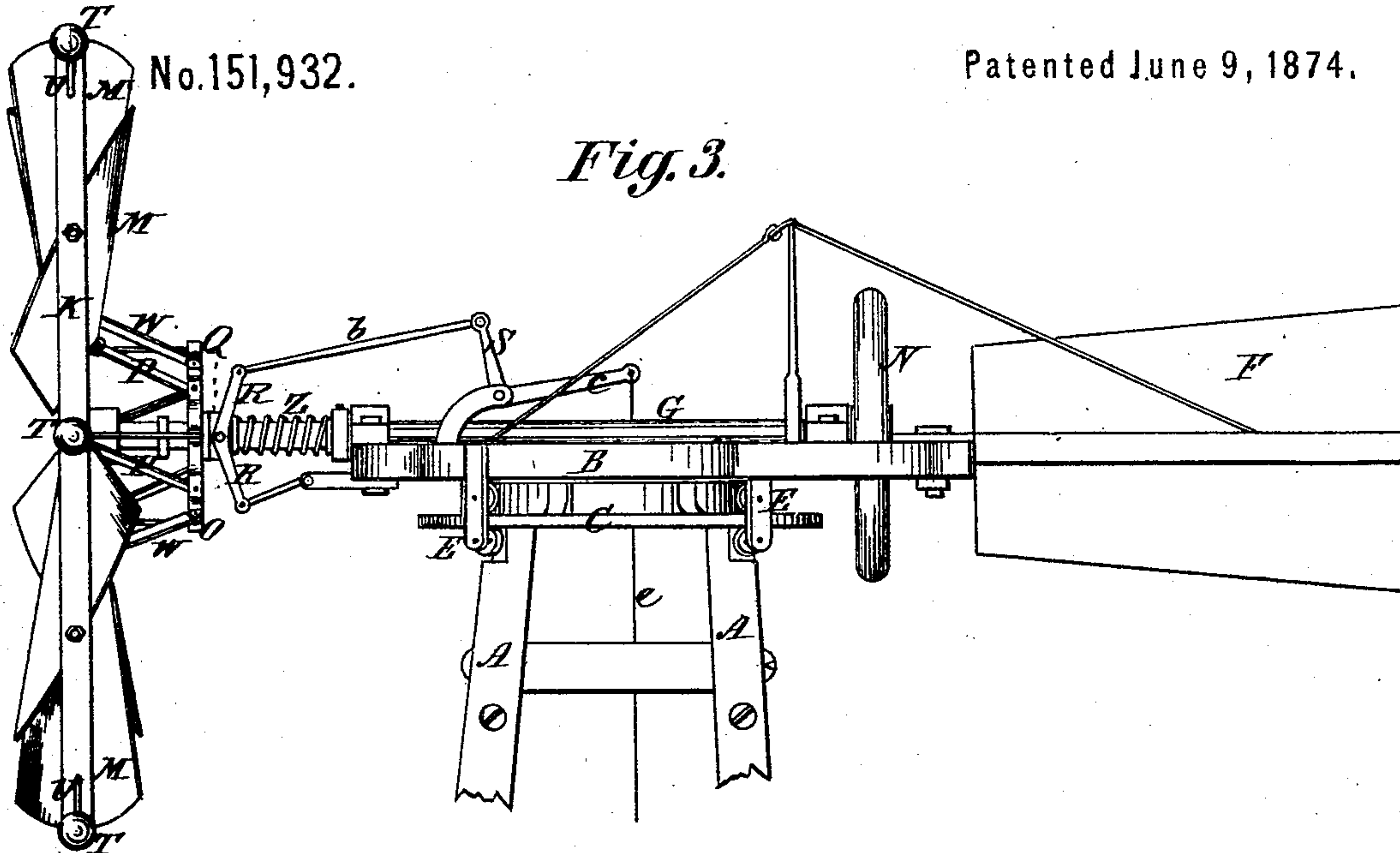
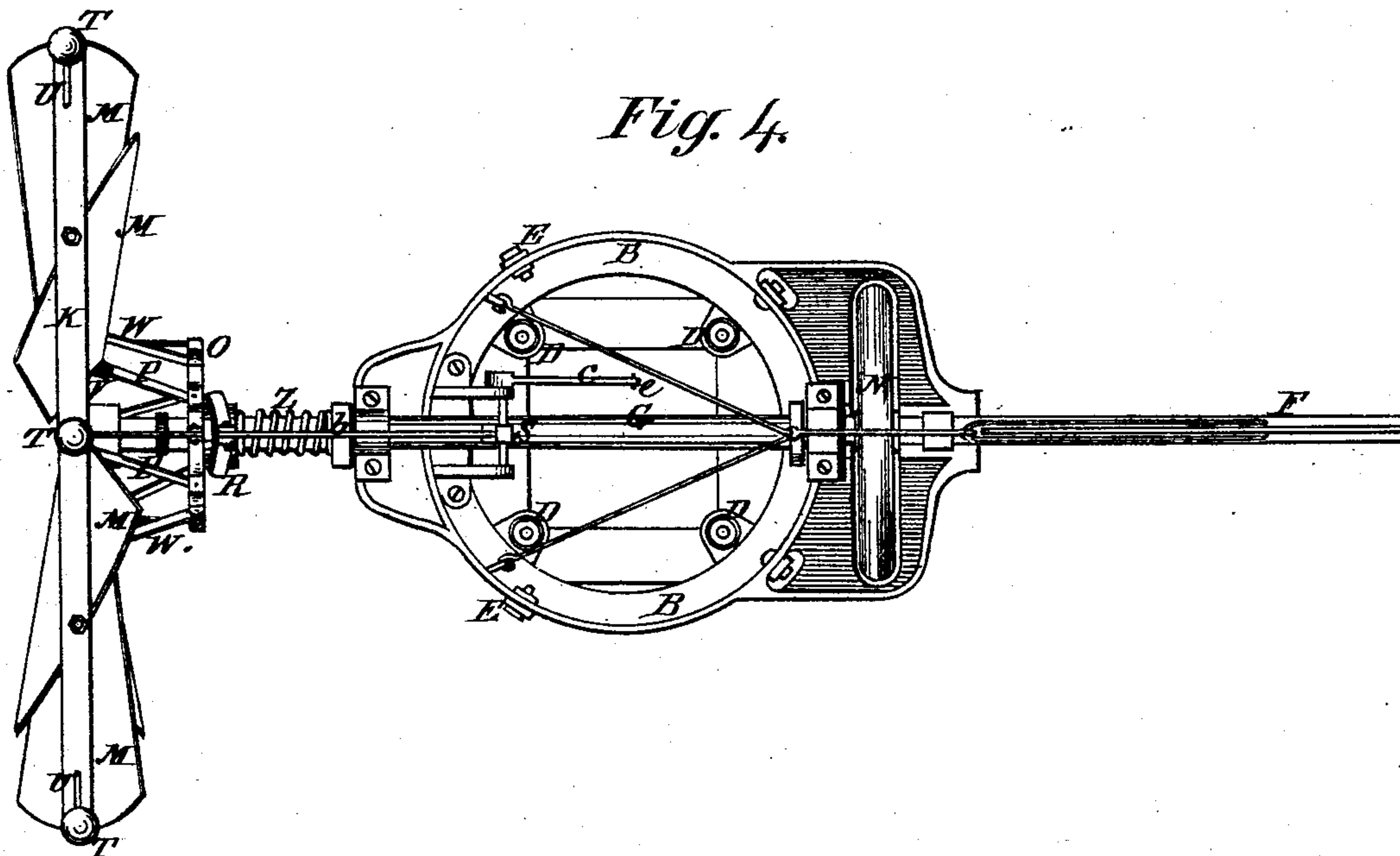


Fig. 4.



Witnesses:
J. Rutherford
Wm. C. Chaffee

Inventor:
Charles H. St. Clair,
by Johnson & Johnson
his Attorneys.

UNITED STATES PATENT OFFICE.

CHARLES H. ST. CLAIR, OF NEW ORLEANS, LOUISIANA.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **151,932**, dated June 9, 1874; application filed April 17, 1874.

To all whom it may concern:

Be it known that I, CHARLES H. ST. CLAIR, of New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvement in Windmills, of which the following is a specification:

My invention relates to an improvement in that class of windmills represented in a patent granted to me June 28th, 1870; and the particular features of my invention consist in the combination, with the inclosing rim and the centrifugal-acting regulating ball-rods, of fixed stops arranged directly upon the rods which carry the balls, whereby, when the balls are thrown outward by the speed of the wheel, the said fixed stops are brought in contact with the inner side of the rim, and thus arrest the outward movement of the balls, the employment of the rim and the ball-rods for this purpose avoiding the necessity of separate devices for effecting the same result, and rendering the wheel less expensive and cumbersome. Also, in the combination of links pivoted separately to the corners of the vanes and to the spider, with links pivoted to the separate bell-cranks of the ball-rods, whereby both the ball-rods and the vanes are connected and operated by couplings free from all binding action, and in which the action of each coupling assists that of the other to render the disconnected vanes and the ball-rods controllable by the same spider, to which they are separately attached, the design of the invention being to afford, by the separate couplings for the ball-rods and the vanes, great facility for replacing either of these parts without disturbing the others, and to render the working of the vanes free, and without being encumbered by the working of the weighted regulating-rods.

In the accompanying drawings, Figure 1 represents a front elevation of a wind-wheel embracing my invention. Fig. 2 represents a rear elevation of the same; Fig. 3, Sheet 2, a side elevation, and Fig. 4 a plan or top view, thereof.

The tower or frame A, supporting the revolving platform or turn-table B, movable on a stationary platform, C, which is provided with rollers D, to center and hold the turn-table in place, and with lower tracks upon

which travel wheels fitted on pendent arms E affixed to the revolving platform, is substantially the same as in my patent referred to. The directing-vane or tail F, attached to the supporting or revolving platform, is also a feature common to all mills of this description. The horizontal power-shaft G is journaled in boxes affixed to the revolving platform, and carries at its outer end a hub, H, preferably of a skeleton form, to diminish its weight, from which hub radiate arms I, to the outer extremities of which is attached a continuous rim, K, which parts together form the frame of the wheel. In the periphery of the hub are formed a series of radial sockets, a, forming the inner pivot-bearings for the arms I of the vanes M, the outer ends of which arms are fitted in sockets in the wheel-rim. The power-shaft G is provided with a central crank or eccentric, to which is connected, in any suitable manner, the piston-rod of a pump, for transmitting a reciprocating movement to the piston of the same, as in my said patent. A fly-wheel, N, is affixed to the rear end of the power-shaft, which serves to equalize the movement of said shaft by accumulating power for varying or intermittent revolutions caused by fluctuations in the wind. A spider, O, sleeved on the power-shaft in rear of the wheel, is provided with pivoted links or rods P, which are also pivoted to an ear projecting from the rear side of the vane or sail, near its base and to one side of its axis. On the sleeve or hub of the spider O is located a swivel-ring, Q, to which is pivoted a yoke, R, embracing the power-shaft, and connected by one end with the revolving platform by a pivoted link, b, and by the other end with a transverse elbow or crank-lever, S. This transverse bearing is provided with an arm, c, projecting therefrom, and to which is connected the rod e, which extends downward to a suitable distance for operating the same. When the wind is moderate the action of the wheel is continuous and steady, but during the prevalence of a gale it is desirable to arrest the movement of the wheel, and for effecting this result it is only necessary to pull the cord e, when, through the medium of the pivoted yoke B, connecting-rod b, and spider O, connected with the vanes by the links above referred to, the vanes will be turned

on their axes, causing their edges to be presented to the wind, thus feathering the same, and arresting the movement of the wheel.

In certain cases the attendant of the mill is not prepared, or at his post, for arresting the movement of the mill, and, as the sudden advent of a gale may cause serious damage to the operative parts, I have found it necessary to employ automatic means for accomplishing the arrest of the mill, and for this purpose I provide a series of weighted balls, T, of a suitable size, which are attached to the outer ends of rods U, whose inner ends are connected with elbow-cranks V, to which links W, connecting the same with the sliding spider, are attached. The rods U, carrying the weighted balls T and the elbow-cranks V, are arranged between the contiguous edges of the vanes, thus placing said parts in a position where they will not interfere with the action of the latter. The action of said weighted balls is such that during a moderate wind they will, by reason of their gravity and centrifugal force, caused by the revolution of the wheel, increase the power and velocity of the wheel within a safe limit, but during the prevalence of a gale they will, by reason of its too great velocity, cause the balls to be thrown in an outward direction from the rim of the wheel, the outward movement of the balls being limited by means of stops i on the carrying-rods U, which act against the inner side of the rim of the wheel. The balls, when actuated as described, will cause

the operation of the supporting-rods, elbow-cranks, and, through the medium of the connecting-links, the sliding spider, which will then act as if operated by hand to feather the vanes for limiting or entirely arresting the movement of the wheel. When the violence of the wind subsides, it is desirable to return the vanes to their normal or acting position, and for this purpose I locate upon the power-shaft in rear of the spider a coiled or spiral spring, Z, which is forced back, however the spider may be moved, whether automatically or by hand, and returned to its original position for exerting sufficient pressure upon the spider, to hold the same in position when the wheel is in operation.

Having described my invention, I claim—

1. The combination of the inclosing-rim K, and the centrifugal-acting regulating ball-rods T U, with the stops i arranged directly upon the rods which carry the balls, as and for the purpose set forth.

2. The combination, with the spider O, of the links P, pivoted separately to the corners of the vanes M, and the links W, pivoted separately to the bell-cranks V, as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 31st day of January, A. D. 1874.

CHARLES H. ST. CLAIR.

Witnesses:

CHAS. MILLER,

R. W. MITCHELL.