

J. TRAVIS, Jr.
WINDMILL REGULATOR.

Patented Jan. 22, 1895.

Fig. 1.

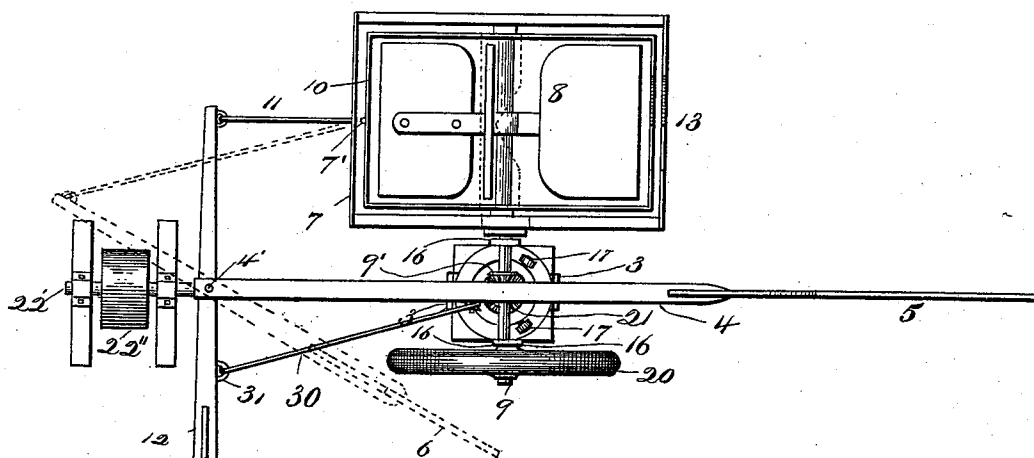


Fig. 2.

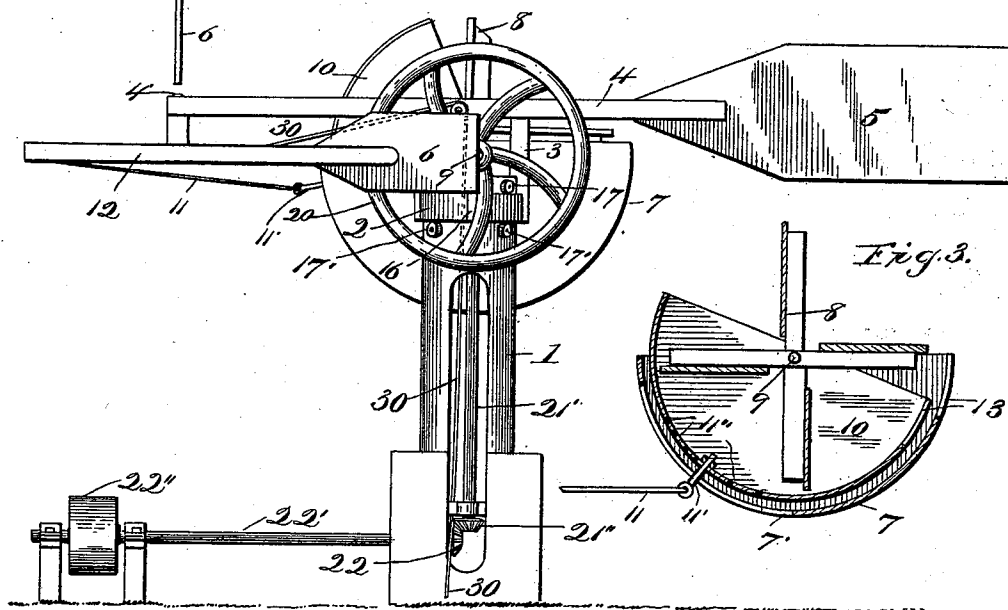


Fig. 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

JAMES TRAVIS, JR., OF CASCADE, MONTANA.

WINDMILL-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 532,843, dated January 22, 1895.

Application filed May 25, 1894. Serial No. 512,448. (No model.)

To all whom it may concern:

Be it known that I, JAMES TRAVIS, Jr., a citizen of the United States, and a resident of Cascade, Cascade county, State of Montana, have invented certain new and useful Improvements in Windmill-Regulators; and my preferred manner of carrying out the invention is set forth in the following full, clear, and exact description, terminating with claims particularly specifying the novelty.

This invention relates to windmills, and more especially to that class thereof known as automatic regulators; and the object of the same is to provide means for automatically regulating the speed of a windwheel mounted on a horizontal shaft.

To this end the invention consists in the construction described below, and illustrated in the accompanying drawings, wherein—

Figure 1 is a plan view showing the parts at rest. Fig. 2 is a side elevation showing the parts in position to check the speed of the wheel. Fig. 3 is a longitudinal section through the two casings, showing the means for adjusting the eye-bolt in the inner casing.

Referring to the said drawings, the numeral 1 designates the tower which is by preference not very high on account of the construction of this device, and 2 is a horizontal ring journaled upon and turning around the upper end of the tower. Rising from the ring are two uprights 3 supporting a long beam 4 carrying at its rear end the main tail 5 intended to stand in line with the wind and hold the wheel in proper position. Rising from the ring 2 at points quartering to the uprights 3 are two bearings 16 in which is journaled a horizontal shaft 9 passing under the beam 4 and carrying at one end the windwheel 8 which may be of any suitable construction, and at the other end a large fly wheel 20 which also serves to counterbalance the weight of the windwheel. 7 is a semi-circular casing hanging on this shaft and surrounding the lower half of the windwheel, and this casing has a slot 7' from its bottom at its transverse center up its front.

12 designates the tail frame pivoted at about its center at 4' to the front end of the beam 4

on a vertical pivot, carrying at one end the regulating tail 6, and connected at its other end by a wire or chain 11 with an eye-bolt 11' which passes through the slot 7' in the casing and takes into one of a series of holes 11'' in the bottom of a somewhat smaller semi-circular casing 10 mounted on the shaft 9 within the casing 7 and around the wheel 8. The rear ends of these two casings are preferably notched as shown at 13 to permit the wind to pass out.

With this construction, the parts standing as seen in Fig. 1, the wind striking the face of the blades of the wheel will cause the latter to revolve as will be clear, but when the wind becomes too violent it will blow the regulating tail 6 around as here indicated in dotted lines, until it or its frame strikes the rim of the balance wheel 20 which will form a powerful brake to check and finally stop entirely the rotation of said wheel and hence the movement of the entire device. Before the regulating tail reaches this position, however, it will as it moves draw on the wire 11 which will cause the eye-bolt 11' to move up the slot 7' a distance regulated by the force of the wind; and this will turn the inner casing partially or wholly up in front of the wheel as seen in Fig. 2. The setting of the eye-bolt 11' in one of the various holes 11'' obviously regulates the distance which the inner casing will rise; and these holes also serve to permit water which might fall into the inner casing to run out, whence it finds its passage through the slot 7' to the exterior. I purposely adjust the connection of the eye-bolt with the inner casing rather than adjusting the connection of the chain 11 with the tail frame. The latter arrangement would hold the tail frame at an undesirable angle to the direction of the wind and would prevent it from turning to the rear sufficiently to form the brake; whereas the construction I do use permits the tail frame to stand at right angles to the wind and also to turn to the rear sufficiently to form the brake and simply raises the inner casing slightly above the front edge of the outer casing. It will be observed that the main tail 5 is sufficiently large to hold the

shaft 9 always at right angles to the wind, and that the entire device can turn with its ring 2 completely around the tower 1.

Any suitable means may be employed for holding the ring on the tower, but I have shown the latter as provided with three anti-friction wheels 17 above and three 17' below the ring so as to steady the same and prevent binding. I have also shown the main shaft 9 as provided with a miter gear 9' which meshes with a horizontal miter gear 21 at the upper end of a vertical shaft 21'; and the latter has at its lower end another miter gear 21'' meshing with a vertical miter gear 22 on a horizontal shaft 22' near the ground, which latter shaft carries a pulley 22'' from which may lead a belt to carry the power of the windwheel to any machinery which is to be driven. Obviously, however, the main shaft 9 could be cranked if desired, and the power communicated from this crank down the tubular tower to the ground, and thence to suitable machinery in the ordinary way.

30 is a cord or chain attached at 31 to the regulator tail frame 12 at one side of the pivot 4', passing thence over an upright pulley 32 on the beam 4, and leading to the ground; and by drawing on this cord it will be obvious that the regulator tail frame can be turned the same as it would under a strong wind, and the inner casing will be moved up in front of the wheel to cut off the wind therefrom and decrease or check entirely the rotation of the windwheel. This regulator cord can be drawn upon sufficiently to throw the tail 6 or its frame around against the driving wheel 20 so as to form the brake above mentioned—the more effectually and quickly to stop the movement of the wheel and main shaft when rotating at a high degree of speed.

All parts of this device are of the desired sizes, shapes, proportions, and materials; and considerable change in and addition to the

specific details of construction may be made without departing from the essential principles of my invention.

What is claimed as new is—

1. In a windmill regulator, the combination with the main framework, a horizontal shaft supported thereby, a windwheel on the shaft, and a tail frame pivoted to the main framework; of an outer casing supported by said shaft around the lower half of the windwheel and having a longitudinal slot in its front end, an inner casing journaled on the shaft outside of the windwheel within the outer casing and provided with a series of holes in alignment with said slot, an eye-bolt mounted in one of the holes and projecting through the slot, and a rod or chain connecting said bolt with the tail frame, as and for the purpose set forth.

2. In a windmill, the combination with a tower, a ring journaled around the upper end thereof, two uprights rising from opposite points on the ring, a beam secured to the uprights, and extending across the ring, and a main tail carried by said beam; of two bearings rising from the ring at points quartering to the uprights, a shaft journaled in the bearings, and passing under the beam, a windwheel secured to one end and a counterbalancing wheel to the other end thereof, a casing carried by said shaft and standing normally around the lower half of the windwheel, and means for automatically raising said casing to cut off the wind, substantially as described.

In testimony whereof I have hereunto subscribed my signature on this the 18th day of May, A. D. 1894.

JAMES TRAVIS, JR.

Witnesses:

JOS. RICKETT,
J. M. JEFFERS.