2 Sheets--Sheet 1.

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Wind Mill.

No. 166,011. Patented July 27, 1875.

Fig. 1

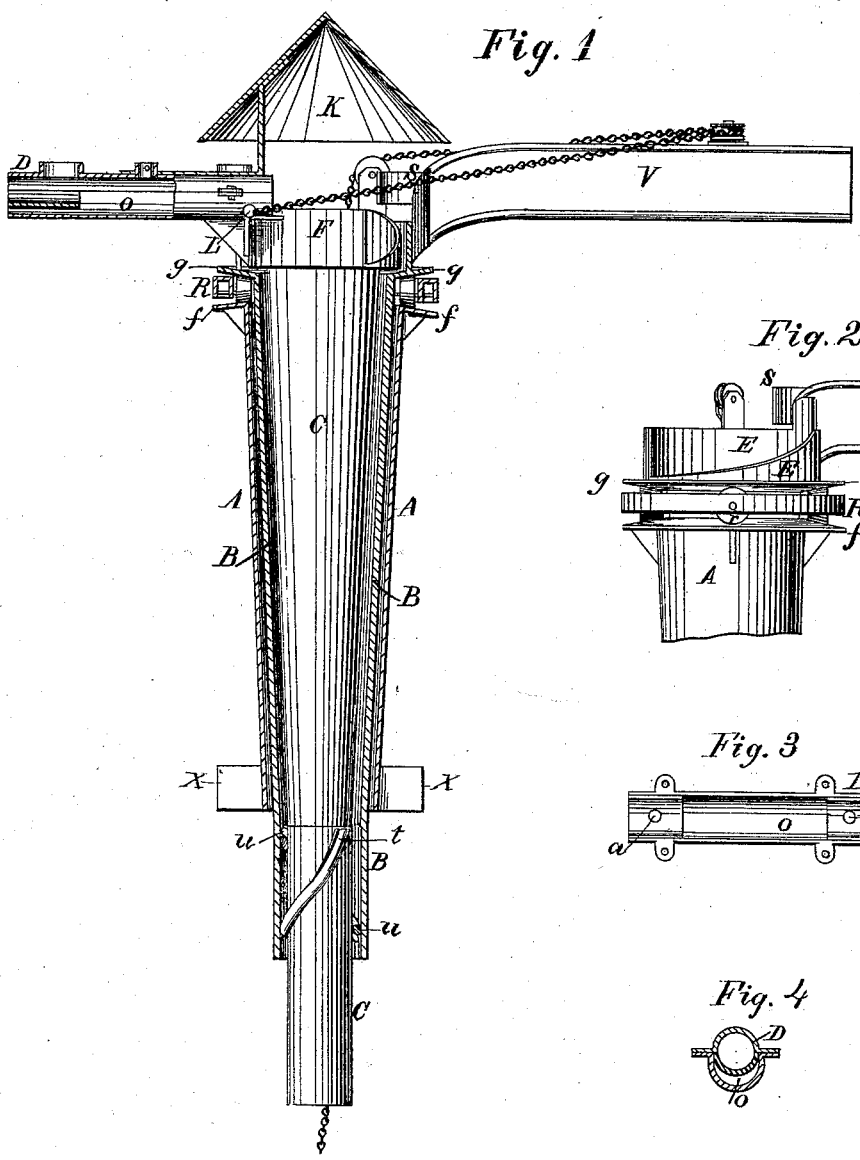

Fig. 2

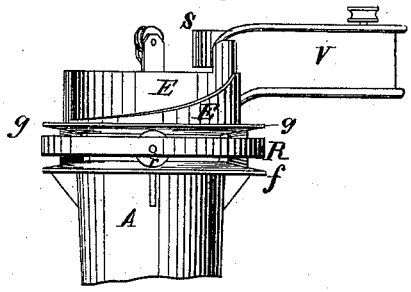

Fig. 3

Fig. 4

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Fig. 5

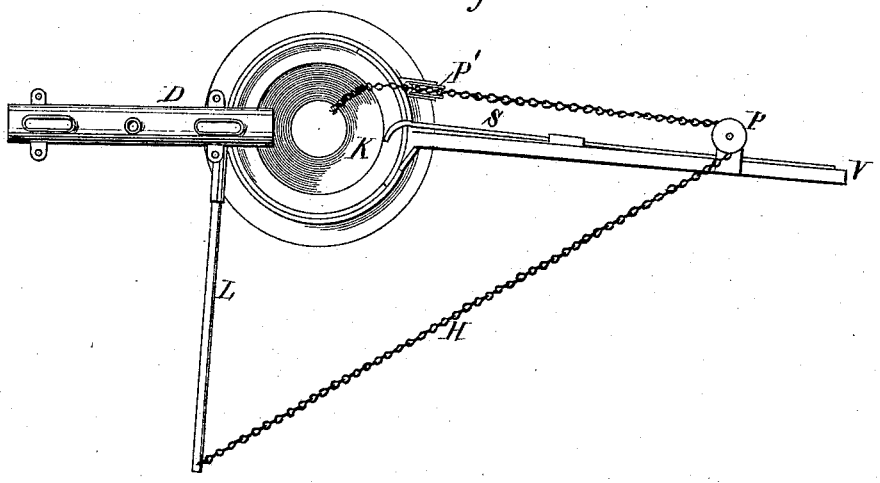


Fig. 6

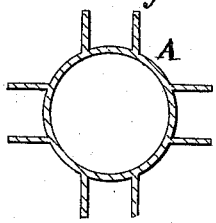
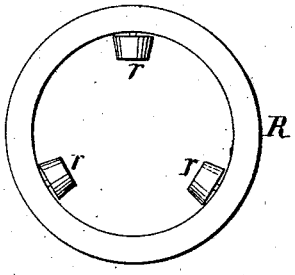


Fig. 7



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UNITED STATES PATENT OFFICE.

TIMOTHY KELLOGG, OF McGREGOR, IOWA.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **166,011**, dated July 27, 1875; application filed June 1, 1875.

To all whom it may concern:

Be it known that I, TIMOTHY KELLOGG, of McGregor, in the county of Clayton and State of Iowa, have invented a new and useful Improvement in Windmills; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings making a part of this specification.

Figure 1 represents a vertical central section of my improved windmill mechanism. Fig. 2 is a side view of the upper end of frustums A and B united. Fig. 3 represents a top view of the lower half of the box in which the shaft turns. Fig. 4 is a transverse section of said box. Fig. 5 is a plan of the mechanism. Fig. 6 is a section on line *x x* of Fig. 1. Fig. 7 is a plan of the friction-ring and rollers.

The same letter indicates the same part wherever it occurs.

A is the inverted frustum of a cone, of cast-iron, with the necessary and proper posts and supports for the frame or tower. At the top is a flange, *f*, cast as a part of it. On this flange rests a ring, R, with friction-rollers *r r*. Within this frustum A is a second frustum of a cone, inverted also, of cast-iron, B, and moving freely within the first. On the top of this there is also a flange, *g*, cast with the frustum, which rests on the ring R, with friction-rollers, above mentioned, and moving or turning on the same. This frustum is longer than the first. Above the flange on this second frustum B extends a cylindrical collar, E, also cast with the rest, of the requisite width, cut away partially on one side, to allow the play of the shaft-arm D. To the side of this is bolted or fastened the vane V. The lower end of this frustum B is made cylindrical. Within this cylindrical part, and cast therewith, are raised spiral threads *t*. Within this frustum B is a third frustum of a cone, inverted as the other two, C, and moving freely within it, also cylindrical at the lower part, which fits within the cylindrical part of the frustum B. This third frustum of a cone, C, is also cast-iron. On the outside of the cylindrical part of this third frustum C are raised spiral threads *u*, cast thereon as a part thereof, fitting and moving on and over those within the cylindrical part of the frustum B. At the top of this third frustum C, and cast thereon, is a cylindrical collar, F, similar to that on the frustum B, and fitting closely and moving freely within the same. To this side is cast the shaft-arm D. This is not on a line with the vane V, so that when all the different parts and frustums are put together the face of the wind-wheel is never at right angles with the line of the vane. When the wind blows with greater force than is necessary to do the work it turns the face of the wind-wheel nearer to a line parallel with the vane, and turning the frustum C on the spiral threads within the concentric cylinders raises the same, compensating the greater force by the greater resistance, and preventing injury to the machinery, and rendering stoppage in high winds unnecessary. The too great force of the wind is also avoided, and graduated to the necessary degree by the turning of the frustum C, so that the wheel receives less force or power of the wind. By this arrangement it is self-adjusting at all times to the force and varying velocity of the wind. The arrangement permits of the revolution of the frustum C so that the face of the wind-wheel shall be on a line parallel to the line of the vane. The collar on the frustum C is cut away at that part moving near the vane, so as to form a shoulder, and as the angle made by the face of the wind-wheel and the line of the vane becomes more acute, this shoulder is brought against a flat spring, S, extending along the side of the vane, which has a tendency to return the frustum C and the wheel to their former positions when the force of the wind and gusts abates. The spring also acts as a regulator. In the bottom of the Babbitt boxes, in which the shaft turns, are holes or slots *a*, connecting with a reservoir, *o*, beneath, stuffed with suitable packing, for the purpose of oiling the shaft and preventing waste. Attached to the top box of the wheel-shaft is a conical cap, K, covering and protecting the openings in the frustums and the interior parts thereof from sleet, snow, or ice. The windmill is thrown out of gear by means of an inflexible lever, L, attached to the side of the wheel-arm, and at right angles thereto on the side

thereof, that the angle made with the line of the vane is acute. To the farther end of the lever is attached a chain, H, passing over pulleys P P′ on the vane and top of the frustum B, and thence passing down through the center of the openings in the frustums, with swivels and connections.

What I claim is—

1. In combination, the concentric cylindrical parts at the lower ends of the two frustums of cones B and C, with spirals fitting and working together, substantially as and for the purpose set forth.

2. The combination of the cylindrical collars E F on the two conic frustrums B C, each collar having a portion of one side cut away on an incline, in the manner and for the purpose described.

3. The combination of the two concentric frustums B C, inverted within a third external frustum, A, which serves as a jacket to inclose them, and as a frame for the attachment of the machine to the lower posts of the mill, all constructed and operating in the manner specified.

4. In combination with the collars E F, constructed as described, the vane V, arm L, shaft D, chain H, and pulleys P P′, all arranged and operating in the manner and for the purpose set forth.

5. In combination with the vane V, the spring S, operating as described, to counteract the forces drawing the vane and shaft out of line, and thus assist in regulating the action of the main shaft.

TIMOTHY KELLOGG.

Witnesses:

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LOUIS G. HURD.