

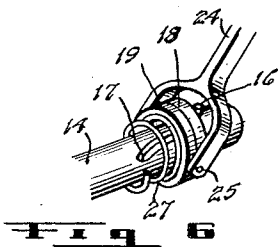
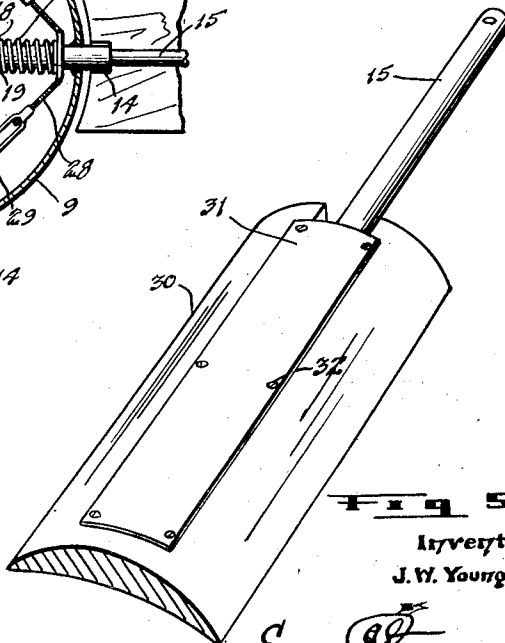
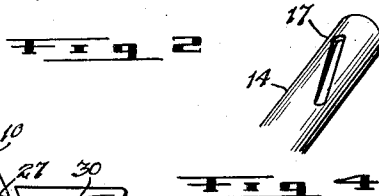
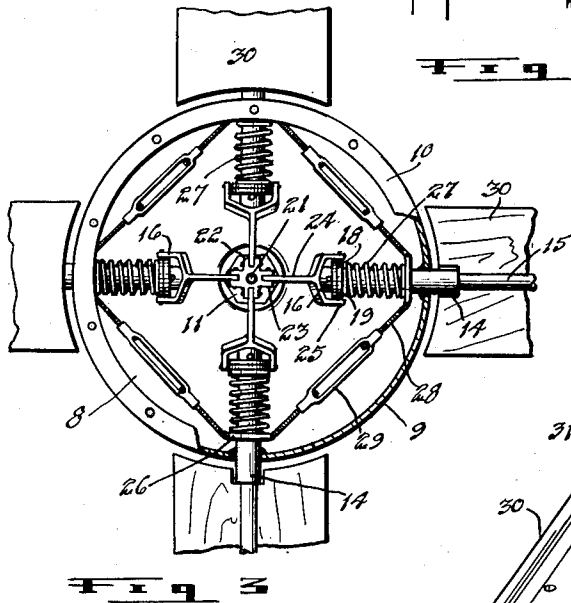
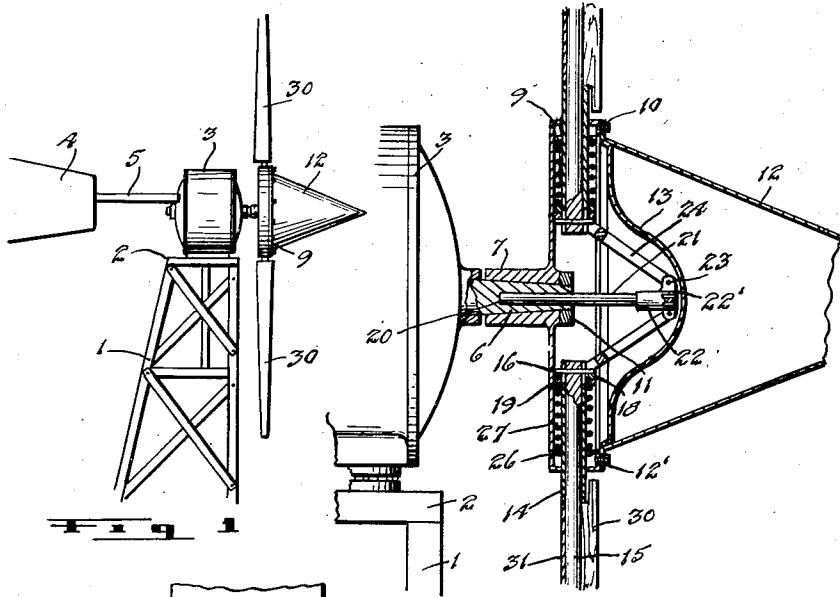
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WINDWHEEL GOVERNOR

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UNITED STATES PATENT OFFICE

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WINDWHEEL GOVERNOR

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2 Claims. (Cl. 170—68)

The invention relates to improvements in windwheel governors and an object of the invention is to provide a governor which will maintain the speed of rotation of the windwheel within a selected speed range and which is arranged so that one can easily adjust it as desired to vary such speed range.

A further object of the invention is to provide a windwheel having the blades thereof mounted for radial out movement under the action of centrifugal force and provided with means for rotating the blades around their longitudinal axis as they move out to increase the pitch thereof and to associate with the blades pressure springs normally resisting such out movement.

A further object of the invention is to provide means for adjusting the tension of the springs as occasion requires.

A still further object is to provide means for insuring that the blades will shift radially an equal amount and simultaneously.

A further object is to construct all parts in a simple, durable and inexpensive manner and so that the various working parts can be effectively lubricated and such that the various parts are easily accessible for repair, inspection or adjusting purposes.

With the above more important objects in view, the invention consists essentially in the arrangement and construction of parts hereinafter more particularly described, reference being had to the accompanying drawing, in which:—

Fig. 1 is a side elevation of a windwheel equipped with my invention.

Fig. 2 is an enlarged detailed vertical sectional view centrally through the governor.

Fig. 3 is a front view of the parts, the cone and cover plate having been removed.

Fig. 4 is a perspective view of the inner end of the sleeve and showing the spiral slot therein.

Fig. 5 is a perspective view of part of the vane or blade.

Fig. 6 is a perspective view of the inner end of the sleeve and associated parts.

In the drawing like characters of reference indicate corresponding parts in the several figures.

The windwheel stand or trestle 1 has the platform 2 thereof supporting an electric generator 3 which is mounted in any suitable manner on the table so that it can turn around its vertical axis under the influence of the tail 4 which is attached to the generator by a bar 5. The generator driving shaft is indicated at 6.

The above parts are of ordinary construction

and a further detailed description is accordingly not considered necessary.

The forward end of the motor shaft is tapered and frictionally receives the hub 7 of a disc 8, the disc being supplied with a rim 9 which carries a front inturned flange 10. A nut 11 is screw threaded on the forward end of the shaft and holds the hub in place and the arrangement is such that the hub turns with the shaft.

A cone shaped deflector 12 is provided, the deflector having the base thereof supplied with an out turned flange which is fastened by bolts 12' to the flange 10. To the base of the deflector, I secure permanently in any well known manner a closure plate 13 which has the central part thereof forwardly bulged in the manner best shown in Figure 2 in order to accommodate certain internal parts later described. The disc, rim and closure plate form a casing which contains certain operating parts and which can be filled with oil to lubricate such parts.

To the rim 9, I permanently fasten a plurality of equi-spaced, radially disposed, similar sleeves 14 which actually project centrally through the rim and are grouped in diametrically opposing pairs, there being four sleeves herein shown although the number could be increased or diminished without departing from the spirit of the invention.

In each sleeve, I mount rotatably a spindle which has the inner end thereof provided with a pin 16, the pin having the projecting ends thereof slidably received in similar spiralling slots 17 formed in opposite sides of the sleeve. On each sleeve, I mount two washers 18 and 19, the washer 18 in each instance engaging the ends of the pin which protrude beyond the slots (see Figure 6).

The motor shaft is longitudinally bored and in the bore 20 I force tightly the rear end of an extension shaft 21 which rotates with the motor shaft. The forward end of the extension shaft receives slidably a sleeve 22 which is provided with pairs of lugs 22'. To each pair of lugs I connect by a pivot pin 23 the forward end of a link 24 which has the rear end thereof forked to span the washer 19 and to which it is attached by pivot pins 25.

According to the above arrangement, it will be apparent that the forward end of the extension shaft 21 is connected by the links to the several washers carried by the sleeves 14. On each spindle, I mount slidably a further washer 26 and between the washer 26 and that 19, I place a coiled spring 27, the spring being mounted on the sleeve. The several washers 26 are connected together by

similar tie rods 28, suitable turn buckles 29 being inserted in the rods so that the same can be adjusted. It will be apparent that the tie rods hold the washers 26 against out movement and accordingly the springs operate to hold the pins 16 normally at the inner ends of the slots 17.

To the spindles 15, I secure in any suitable manner similar blades 30, the blades being all positioned on the spindles so that they have their least pitch to the wind when the pins 16 are at the inner ends of the slots 17. Actually I have shown a plate 31 securely fastened as by welding to the spindle, the blade channeled to receive the spindle and the plate fastened as by screws 32 to the back of the blade. This allows of the ready removal of the blades when required.

According to the construction provided, it will be seen that up to the time that the pressure of the springs is overcome, there will be no turning movement of the blades around their axis and as the springs can be regulated, the maximum speed at which the wind-wheel can turn before the pressure of the springs is overcome, is fixed. Should the wind rise, the wind-wheel will be rotated at a higher velocity and centrifugal force will then act to compress the springs and this results in the turning of the blades a greater or less amount directly in proportion to the increase in the wind velocity, the turning of the blades being effected by the pins in the slots.

With this type of governor, I am able to cause the wheel to rotate within a limiting speed range for known wind velocities and accordingly, am able to limit the current delivered by the generator. The sleeve 22, the extension shaft and the links insure that the several spindles will move out and in together and while they are not necessary

to the operation of the device, they are desirable. What I claim as my invention is:—

1. In a windwheel, in combination, a rotatably mounted closed casing, a plurality of radially disposed sleeves permanently secured to the wall of the casing, a blade carrying spindle rotatably mounted in each sleeve and endwise shiftable under the action of centrifugal force, pins carried by the inner ends of the spindles and slidably received within spiralling slots provided in the sleeves and adapted to rotate the spindles to increase the pitch of the blades as the spindles move out under the action of centrifugal force, a washer slidably mounted on each sleeve within the casing, adjustable tie rods connecting the washers together, a second washer on each sleeve engaging the pin and a spring interposed between the first and last washer.

2. In a windwheel, in combination, a rotatably mounted closed casing, a plurality of radially disposed sleeves permanently secured to the wall of the casing, a blade carrying spindle rotatably mounted in each sleeve and endwise shiftable under the action of centrifugal force, pins carried by the inner ends of the spindles and slidably received within spiralling slots provided in the sleeves and adapted to rotate the spindles to increase the pitch of the blades as the spindles move out under the action of centrifugal force, a washer slidably mounted on each sleeve within the casing, adjustable tie rods connecting the washers together, a second washer on each sleeve engaging the pin, a spring interposed between the first and last washer and means coupling the several spindles together so that they move out simultaneously.

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