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COMPLETE SPECIFICATION

FOR LETTERS PATENT.

"Improvements in Windmills"

I, John Marshall of Springston in the Provincial District of Canterbury and Colony of New Zealand. Mechanic.

do hereby declare the nature of my invention for

"Improvements in Windmills"

and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:

This invention of improvements in Windmills relates more particularly to the construction of the wheel and the construction and attachment of a device

for controlling and regulating the action of the "tail," the object being to simplify the said wheel and minimise the cost, whilst ensuring efficiency, and also to provide a simple yet effective means of controlling and regulating the action of the said "tail" according to the strength and direction of the wind.

In order that my invention may be easily understood I will now proceed to describe the same by reference to the annexed sheet of drawings wherein:

Fig 1 is a front view of half of the improved wheel

Fig 2 is a section of same.

Figs 3 and 4 are a plan and section respectively (half full size) of the wheel centre.

Fig 5 is a full size section of the rims of said wheel

Fig 6 is a back view of Wind mill head (the wheel being removed) showing my improved device for controlling and regulating the action of the "tail".

Fig 7 is a side view of same.

Similar letters refer to similar parts in all the figures.

The wheel consists of three pairs of wrought iron arms A each pair being formed with one piece of iron bent to the required angle; the cast "centre" B is provided with a flanged rim a having slots into which the inner ends of the arms are placed; the centre also has inner flanges b and holes c through which bolts d are passed which firmly secure the said arms to the said centre, the bolt heads bearing against the flanged rim a and inner flanges b.

The inner and outer rims C and D are preferably of galvanized steel and of the section as shown in Fig 5; the outer rim D is rivetted to the outer ends

of the arms A which are turned up for the purpose as shown in Fig 2; the inner rim A is rivetted to clips C which clip the said arms.

The two rims are placed in opposite positions to each other, that is to say the flat side of the outer rim is outside while the flat side of the inner rim is inside as shown in Fig 2.

The sails E are preferably of galvanized steel and are fitted between the inner and outer rims C and B and soldered thereto; the wheel is fitted on the spindle in the usual way.

The improved device for controlling and regulating the action of the tail consists of an angle arm F secured to a cast flanged boss f, while the upper end of another arm G is placed against said boss both being held to the curved bracket H by means of a stud pin g on which they are capable of pivoting.

The lower end of angle arm F is twisted and provided with a hole through which a rod h is passed and secured to the arm G; a spiral spring i is placed on the rod h and held by a nut and washer as shown in Fig 6.

To the upper end of angle arm F the chain j for operating same is connected, while the tail arm chain k is secured to the bottom end of arm G.

The lower end of chain j is connected to a lug on collar l which slides up and down pump rod m and which moves round with said rod; this collar is operated by means of another chain j' having a forke n connected thereto which clips the said collar m, a guide rod o being also connected to the forke n which rod works through a hole in boss l, the bottom end of chain j' is provided with a ring and can be secured to a cross rail on pump stand

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When the chain j' is pulled down and secured, the wheel is brought to the wind, and held in gear but when the said chain is released the wheel is thrown out of gear.

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Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

(1) In windmills

The general construction of the wheel consisting of the arms A, the centre B, the rims C and D and the sails E, substantially as herein described and illustrated in the annexed drawings.

(2) In windmills

The combination and attachment of the two arms F and G with the rod H and spiral spring I as and for the purpose herein described and as illustrated in the annexed drawings.

Dated this 27th day of October A.D. 1893

John Marshall

LARGE DRAWING

FILMED

SEPERATELY.

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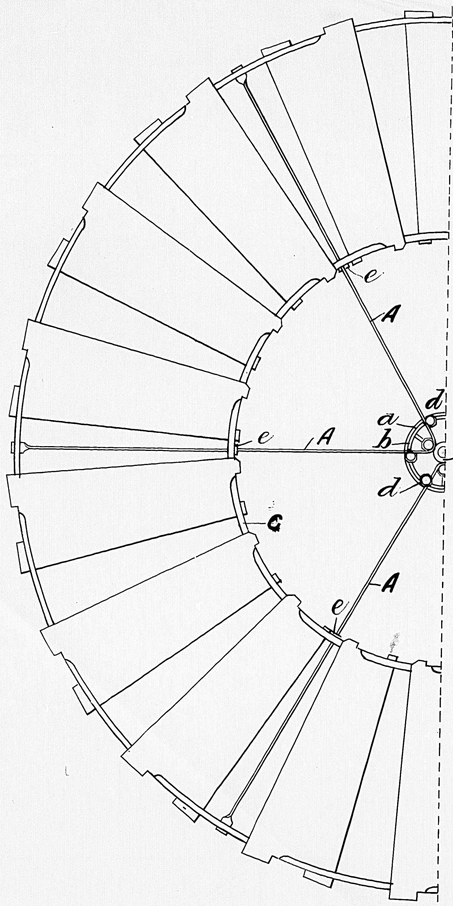


Fig 1.

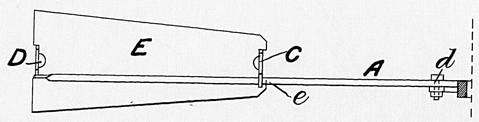


Fig 2.

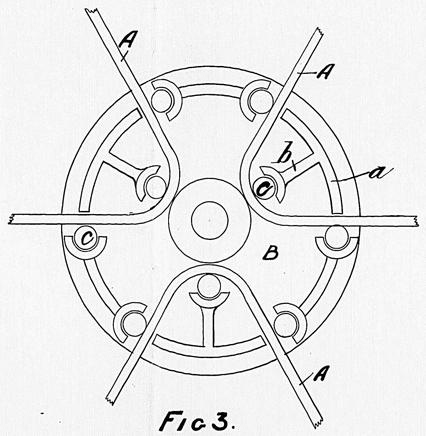


Fig 3.

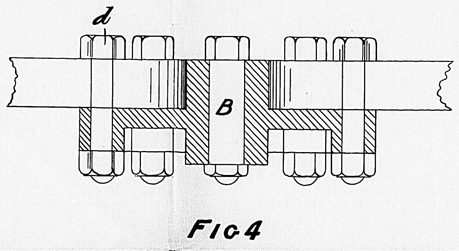


Fig 4



Fig 5.

Fig 6.

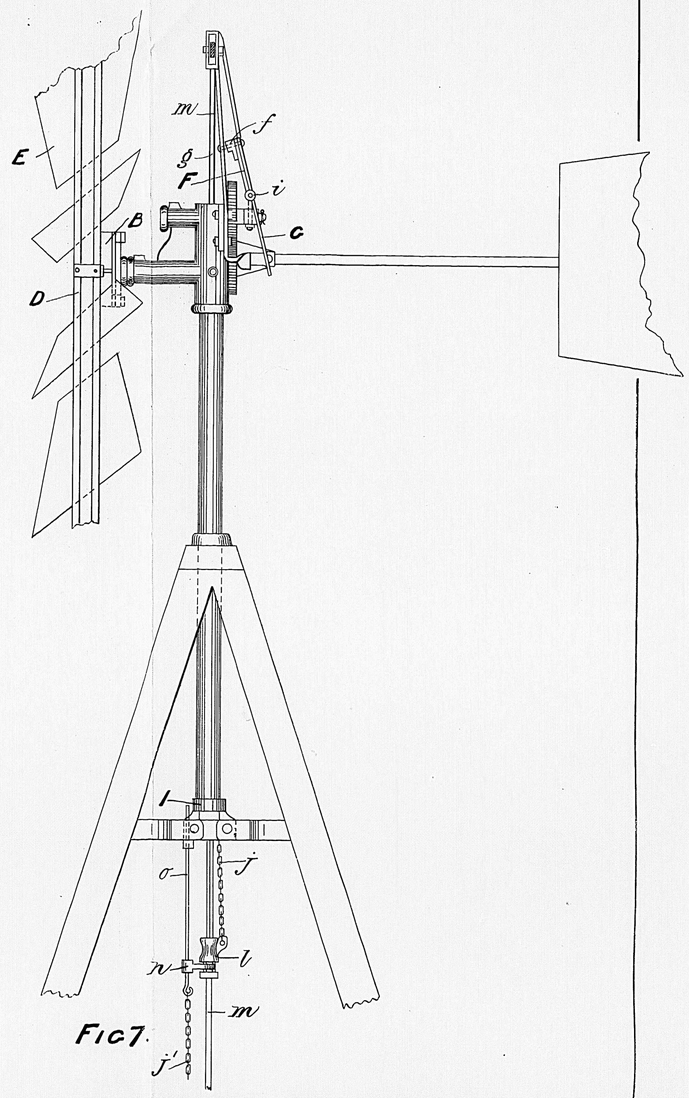


Fig 7.

John Marshall