NEW ZEALAND

PATENT SPECIFICATION

20280 6-11-05 7-9-

20280

Eng (Civil)

90.7

N E W Z E A L A N D.

"THE PATENTS, DESIGNS AND TRADE MARKS ACT, 1889".

COMPLETE SPECIFICATION.

"IMPROVEMENTS IN AND RELATING TO WIND MILLS".

I, JOHN O'NEIL of Colombo Street, Christchurch, in the Provincial District of Canterbury, in the Colony of New Zealand, Hotelkeeper, do hereby declare the nature of my invention for "Improvements in and relating to windmills," and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:-

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This invention relates to windmills and provides improvements in the construction thereof whereby the action and durability of the mill are much improved and the oiling of the bearings is effected in a better manner than hitherto.

According hereto the windmill is mounted upon a horizontal shaft which has an adjustable thrust screw fitting into its end opposite to the wheel and which is mounted in bearings provided with oil wells.

Chains or rings carried in recesses upon the shaft depend into the oil vessels and as the shaft revolves deliver oil to the bearings.

A bevel pinion upon this spindle gears with a bevel wheel fixed upon the end of a vertical shaft which is connected by gearing to a horizontal shaft carrying a crank disc, the crank pin of which is connected to a rod actuating the pump plunger.

The bearings of the wheel shaft are fixed upon a table which is revolvable upon ball bearings and a column fixed to and revolving the table has, at its lower end, guide rods upon which work a flange integral with a sleeve sliding upon the vertical spindle referred to, said sleeve being operated vertically by a fork. To this sleeve is connected a rope preferably of wire which passes over pulleys and is fastened to the tail of the mill so that the wheel may be drawn out of the wind when desired.

A curved guide rod passing through a hole in the table has a spring threaded upon it at each end to provide a buffer when the tail is blown round by a keen

gust of wind.

My invention is illustrated in the accompanying drawings wherein:-

Figure 1 is a side, and

Figure 2 a part end elevation.

Figure 3 a plan,

Figure 4 a sectional elevation at A,

Figure 5 a sectional elevation at B, and

Figure 6 a sectional plan at C.

The horizontal spindle 1 has secured upon it the wind wheel 2 and works in the bearings 3 and 4 which are fixed upon a revolvable table 5.

The bearing 3 is provided with the oil well 6 and an endless chain 7 hanging upon the spindle between collars 8 and 9 thereon depends into the well and carries oil up to the bearings.

The bearing 4 has an oil well 10 into which depends an endless chain 11 which is carried in a groove 12 cut in the spindle, oil being carried up by the chain and delivered to the bearing and also to the end of the spindle which has a hole receiving the pointed end of an adjustable thrust screw 13 which takes the end pressure of the wind wheel.

A bevel pinion 14 fixed upon the spindle gears with a bevel wheel 15 fixed upon a vertical spindle 16 working in bearings 17 and 18 and having a set screw 19 fitting into its lower end for vertical adjustment purposes.

Upon the spindle 16 is a bevel pinion 20 gearing with a bevel wheel 21 fixed upon a spindle 60 the op-

posite end of which has the crank disc 22 said disc having a crank pin 23 passing through a bearing 24 upon the upper end of the pump connecting rod 25.

The bearing 24, as shown in Figure 5, has an oil well 26 in which works an endless chain 27 said chain being suspended over the crank pin 23 and delivering oil thereto.

The sides of the bearing 24 have the oil catching channels 27a and diagonal passages 28 by which oil which may pass through the bearing is conducted back to the oil vessel.

A hole 29 covered by a Cap 30 is provided for the admission of lubricating oil.

A vertical rod 31 passing through ears upon the table 5 forms a pivotal pillar for the bracket 32 which carries the rod 33 of the tail 34, a sleeve 35 upon the tail rod being connected by a brace rod 36 with an arm 37 fixed upon a pillar 38 projecting upwardly from the table 5.

A curved guide rod 39 is fixed by lock nuts 40 to an ear 41 projecting from the table and is threaded through a hole 42 in the bracket 32.

Springs 43 and 44 threaded upon this guide rod act as buffers to ease the shock when the tail is driven round by a sudden gust of wind.

A cylindrical portion 45 of the table has, as clearly shown on Figure 4, a hardened steel washer 46 at its lower end which rests upon a ring of bearing balls 47 running in a circular groove in a steel washer 48 which is carried on a bearing 49 fixed upon the frame of the mill.

A covering 50 of galvanised sheet steel surrounds the bearing and prevents water from getting into the ball groove.

A pillar 51 telescoping in and fixed to the part 45 of the table extends downwardly through a bearing 52 and has a flange 53 at its lower end to which is fixed the guide rods 54 and 55.

A sleeve 56 sliding upon the spindle 16 has a guide flange 57 at its upper end which has recesses upon each side each of said recesses fitting and sliding upon one of the guide rods.

At the lower end of the sleeve 56 are the integral collars 58 and 59 between which fits a fork 60 having, as shown in Figure 2, a downwardly extending rod 61 which works vertically in bearings and is operable to drawdown the sleeve 56.

To the upper end of the sleeve is connected a wire rope 62 which is carried over guide pulleys 63 and 64 and its end connected to the outer end of the bracket 32 so that when the sleeve is drawn down the tail of the mill is drawn sideways with the result that the wheel is moved out of the wind.

The spindle 65 upon which is fixed the bevel wheel 21 and crank disc 22 is carried in a bearing 66 which has an oil chamber 67 and endless chains 68 and 69 threaded upon the spindle depend down into the oil chamber and convey oil up to the bearings.

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 a windmill the employment of a bearing to carry the wind wheel spindle having an oil vessel and an endless chain or ring surrounding the spindle and depending into said vessel for the purpose of delivering lubrication to the bearing, substantially as and for the purposes herein specified and as illustrated in the drawings.

2. In a windmill a table having a cylindrical portion provided at its lower end with a steel washer and a ring of balls supporting said washer, said balls being carried in a groove in a bearing washer for the purpose of reducing the friction due to the revolution of the table substantially as herein specified and as illustrated in the drawings.

3. In a windmill a table having a cylindrical portion provided at its lower end with a steel washer, a ring of bearing balls supporting said washer, said balls being carried in a groove in a bearing washer and a sheet metal cover surrounding the cylindrical portion referred to and employed to prevent water from getting into the bearing substantially as specified.

4. In a windmill a bearing for the end of the connecting rod having an internal oil chamber and an endless chain or ring surrounding a bearing pin passing through said bearing and depending into said oil chamber and catching channels and passages therefrom for conveying overflow oil back to the bearing, substantially as and for the purposes herein specified and as illustrated in the drawings.

5. In the construction of a windmill the combination of parts comprising a table revolvably mounted

upon a fixed bracket, a pillar projecting downwardly from said table and having a flange upon its lower end, guide rods fixed to the flange, a sleeve slidable and revolvable upon a vertical spindle, and carrying a flange guided by said guide rods, collars upon the lower end of said sleeve, and a fork between said flanges for the purpose of operating said sleeve, substantially as and for the purposes herein specified and as illustrated in the drawings.

DATED this 6th day of November, 1905.

Baldwin & Hayward.

Agents for the Applicant.

True Copy

Baldwin & Hayward.

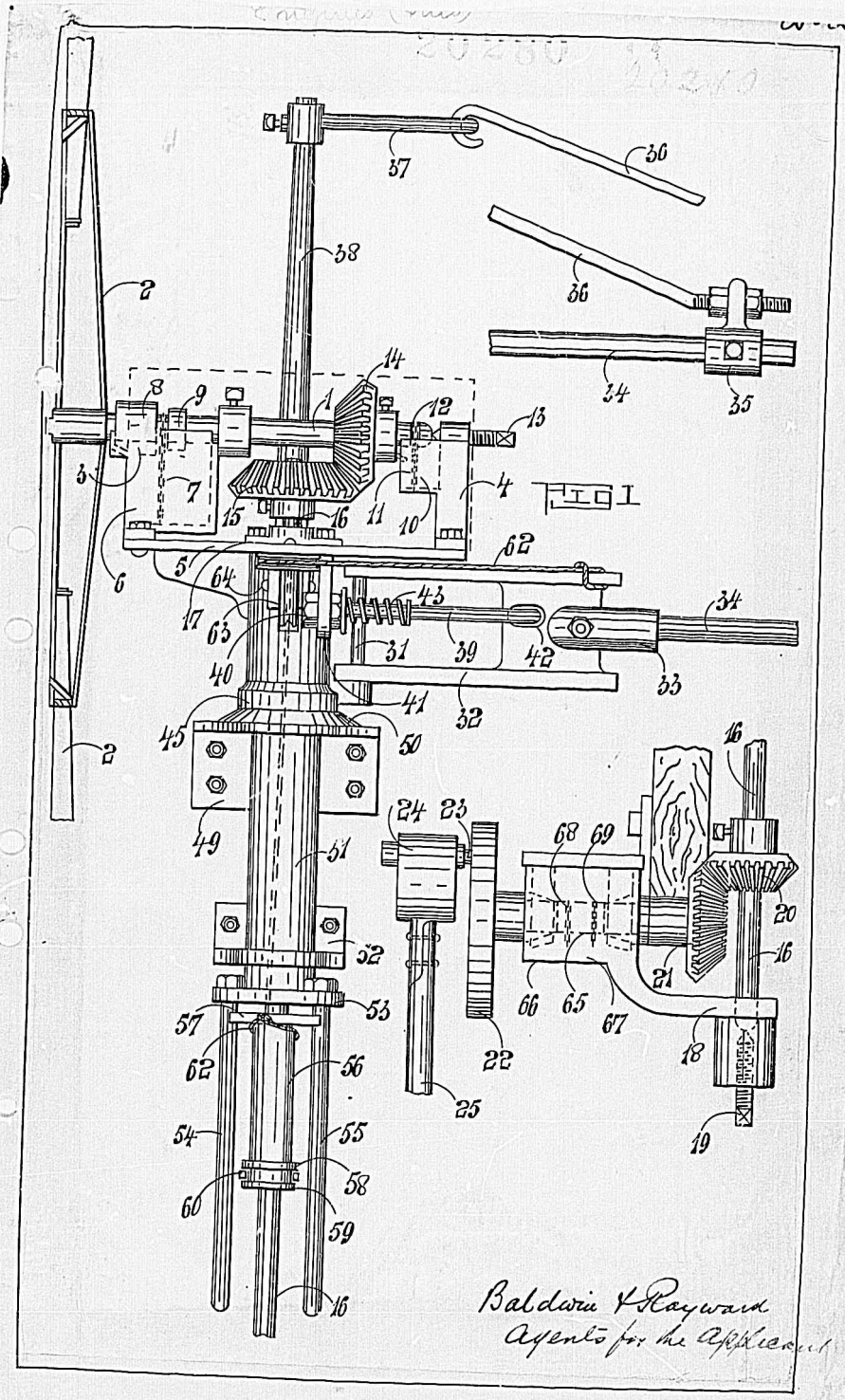


FIG 1

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Fig 2

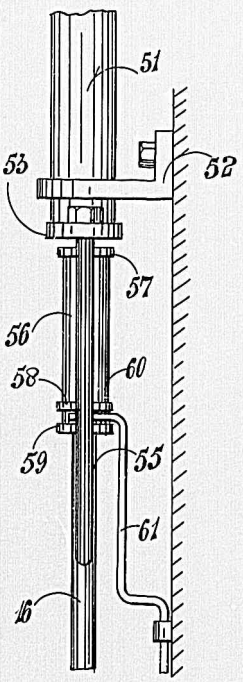


Fig 4

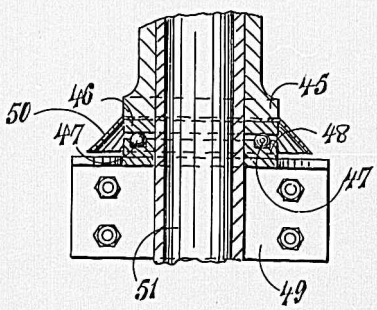


Fig 3

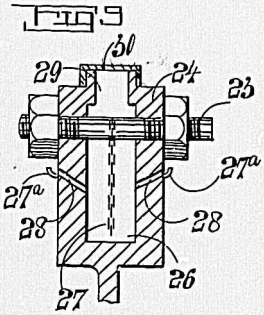
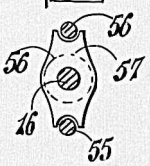
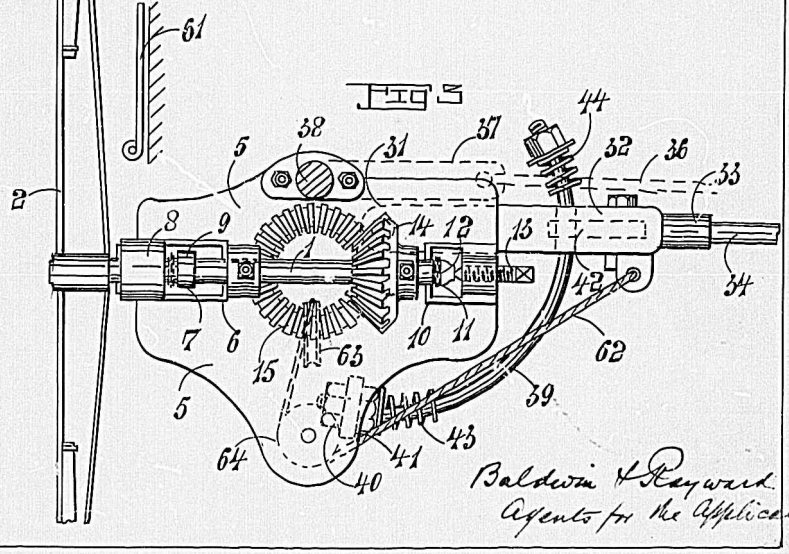


Fig 6





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