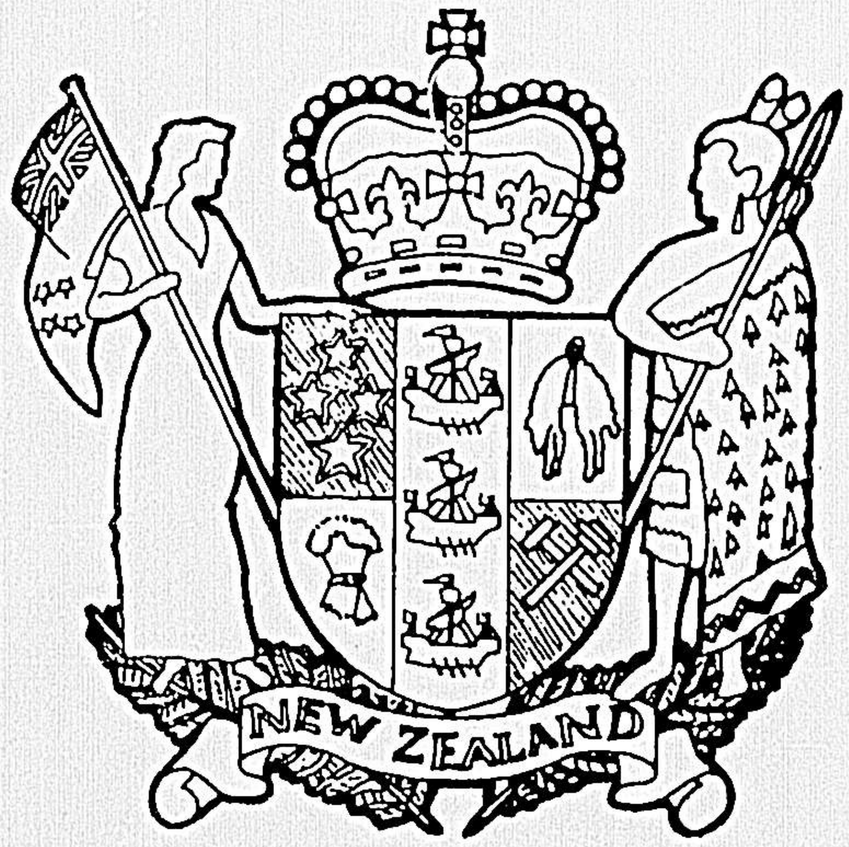


NEW ZEALAND

PATENT SPECIFICATION

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HENRY HUGHES LIMITED. 193 FEATHERSTON ST., WELLINGTON.

PATENT OFFICE 5 MAR 1918 NEW ZEALAND.

JOURNAL.
No. 11
Date: 13. 6. 18

90.7

NEW ZEALAND.

"The Patents, Designs and Trade Marks Act 1911"

COMPLETE SPECIFICATION.

"IMPROVED MEANS FOR AUTOMATICALLY CONTROLLING THE OPERATIONS OF WINDMILLS AND FOR OTHER ANALOGOUS PURPOSES."

I, LOUIS HERBERT CAWOOD, of Marton, in the Dominion of New Zealand do hereby declare the nature of this invention, 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 has been devised specially for use as an automatic control for windmills used in pumping operations, but it may also with equal effectiveness be used to automatically control other mechanism employed in like operations. Its purpose is to provide improved means whereby when a receiving-tank has been filled with water to any desired level the pumping operations will be stopped, and when such level has fallen again they will be resumed, so that the level is automatically maintained and any excess pumping prevented.

The means devised consist in the combination with the delivery-pipe having means for closing its outlet when the water-level rises to the required height, of a cylinder mounted on such pipe and the inner end of which is connected with it, a plunger fitting within the cylinder, and a plunger-rod extending out the other end of the cylinder and connected with means whereby on the plunger moving out through the cylinder a pull will be exerted upon the ordinary and well-known draw-ropes or other device whereby the windmill will be turned out of gear. The closing of the delivery-outlet will cause the water to be diverted into the cylinder under the pump's pressure, and for such pressure then to force the plunger out against the tendency keeping it normally at the inner end. When the delivery-outlet opens again the water will flow from the cylinder back into the delivery-pipe and allow the plunger to move in again and the windmill to come into gear.

The invention is illustrated in the accompanying drawings in which two ways of carrying it out are shown.

Figure 1 is a general sectional elevation showing the cylinder arranged adjacent to the water tank and means whereby a direct pull may be exerted on the control rope.

Figure 2 is an elevation showing the cylinder mounted on the delivery pipe at any point in its length and means whereby the pull on the control rope may be obtained on the operation of a lever.

A is the ordinary delivery pipe leading from the pump to

a storage tank B and having its outlet controlled by an ordinary float valve A' that closes and opens such outlet as the water level rises and falls.

C is a cylinder that is mounted on such pipe by means of a suitable union or connection D and the lower end of which is arranged in direct open communication with the pipe. E is a plunger fitted closely within the cylinder and having the plunger rod F extending out through the outer end of such cylinder.

In Figure 1 the outer end of the plunger rod is shown as fastened to a bridle frame G that extends downwards to beneath the delivery pipe and which therefore rises and falls with the corresponding movements of the plunger E. The bottom end of this frame has the control rope H made fast to it and this rope is then carried over guide pulleys, suitably arranged, to guide it to the windmill gearing of any of the well known types.

The normal position of the gearing when pumping is proceeding is such as to draw the frame and plunger down to the bottom position shewn in the drawings. Then when the float valve A' closes, the pump will force the water into the cylinder C beneath the plunger thereby raising such plunger and the frame and drawing on the control rope H to the necessary extent to pull the windmill gearing out of gear and stop the pumping. When the valve A' opens again the water in the cylinder will be forced back through the delivery pipe A and the plunger allowed to fall, the body of water in the cylinder cushioning the return movement of the plunger and its pendant frame.

In the means shown in Figure 2, a lever J is provided and mounted on the upper end of a standard K fixed on the delivery pipe adjacent to the cylinder C which standard may also, if so desired, form a support for such cylinder. The inner end of this lever is pivotted to the plunger rod F and

its outer end has the control rope H fastened to it. The outward and inward movements of the plunger rod will therefore exert a pull upon and relieve the control rope in the manner required. The connection of the rope to the lever may be made at any point thereon so that the amount of pull exerted thereon may be regulated to any required extent.

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. Means for the purposes herein described consisting in the combination with a delivery pipe having means for closing its delivery outlet and with a rope connected to the control gearing of the mechanism of a cylinder mounted on such delivery pipe and connected at its inner end with the pipe, a plunger fitting in such cylinder, a plunger rod attached to the plunger, and extending through the outer end of the cylinder, and connections between the said plunger rod and the control rope by which the outward and inward movements of the plunger will exert a pull upon and release the said control rope, substantially as specified.

2. In the means for the purposes herein described set forth in claim 1, a bridle frame attached at its upper end to the end of the plunger rod and depending thereon and at its lower end connected to the control rope, substantially as specified.

3. In the means for the purposes herein described set forth in claim 1, a lever pivoted adjacent to the cylinder, connected at one end to the top of the plunger rod and having its other end attached to the control rope, substantially as specified.

Dated at Wellington the 8th day of March 1918.

HENRY HUGHES, LTD.
W. B. Alexander
AGENT FOR THE APPLICANT.

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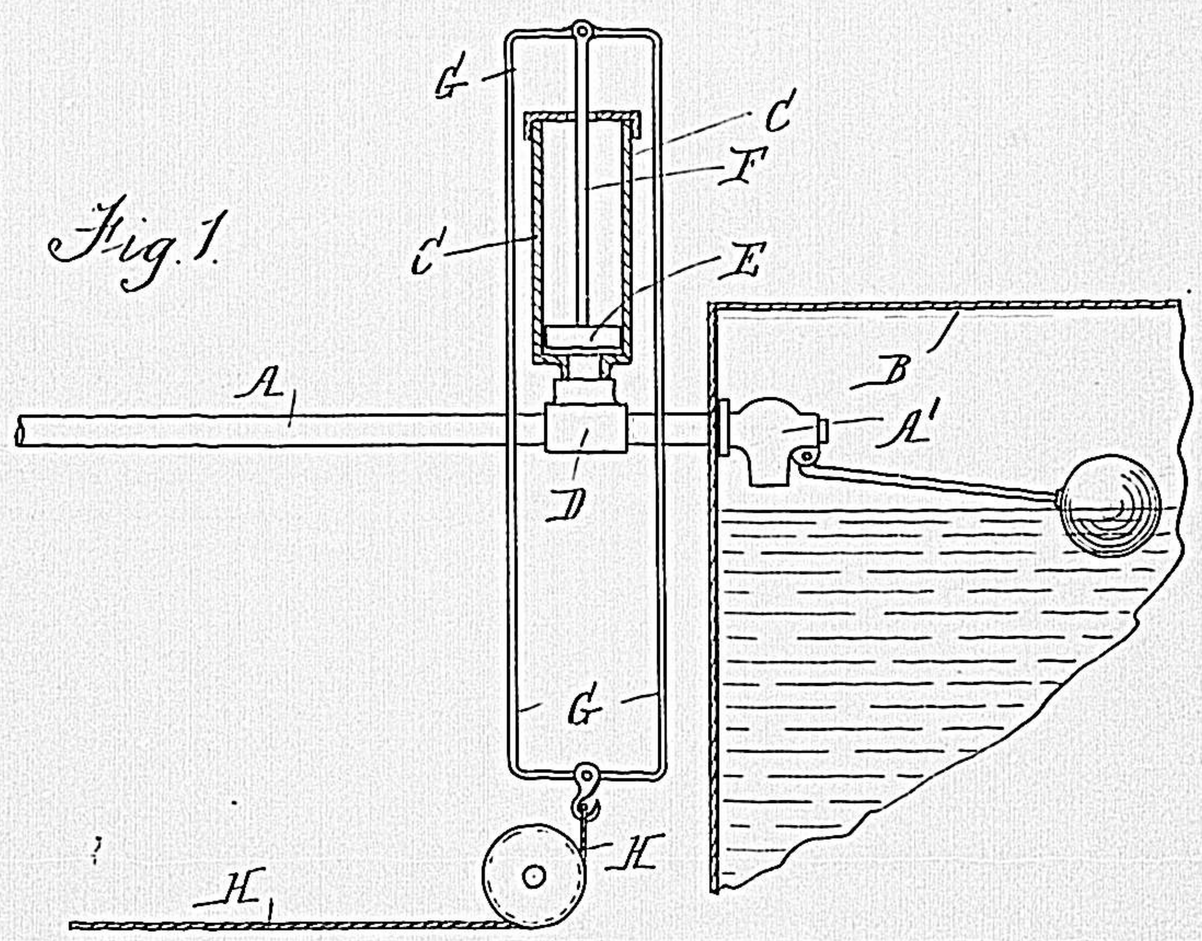


Fig. 1.

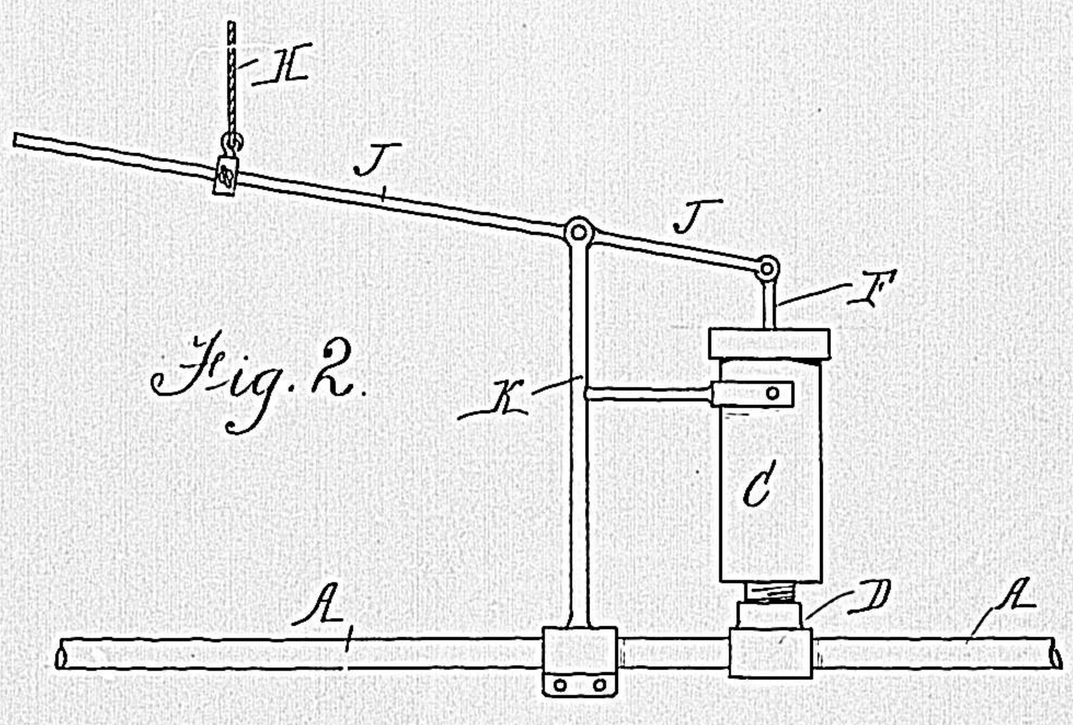


Fig. 2.

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Cawood

END