

No. 672,762.

Patented Apr. 23, 1901.

E. GRAHAM.

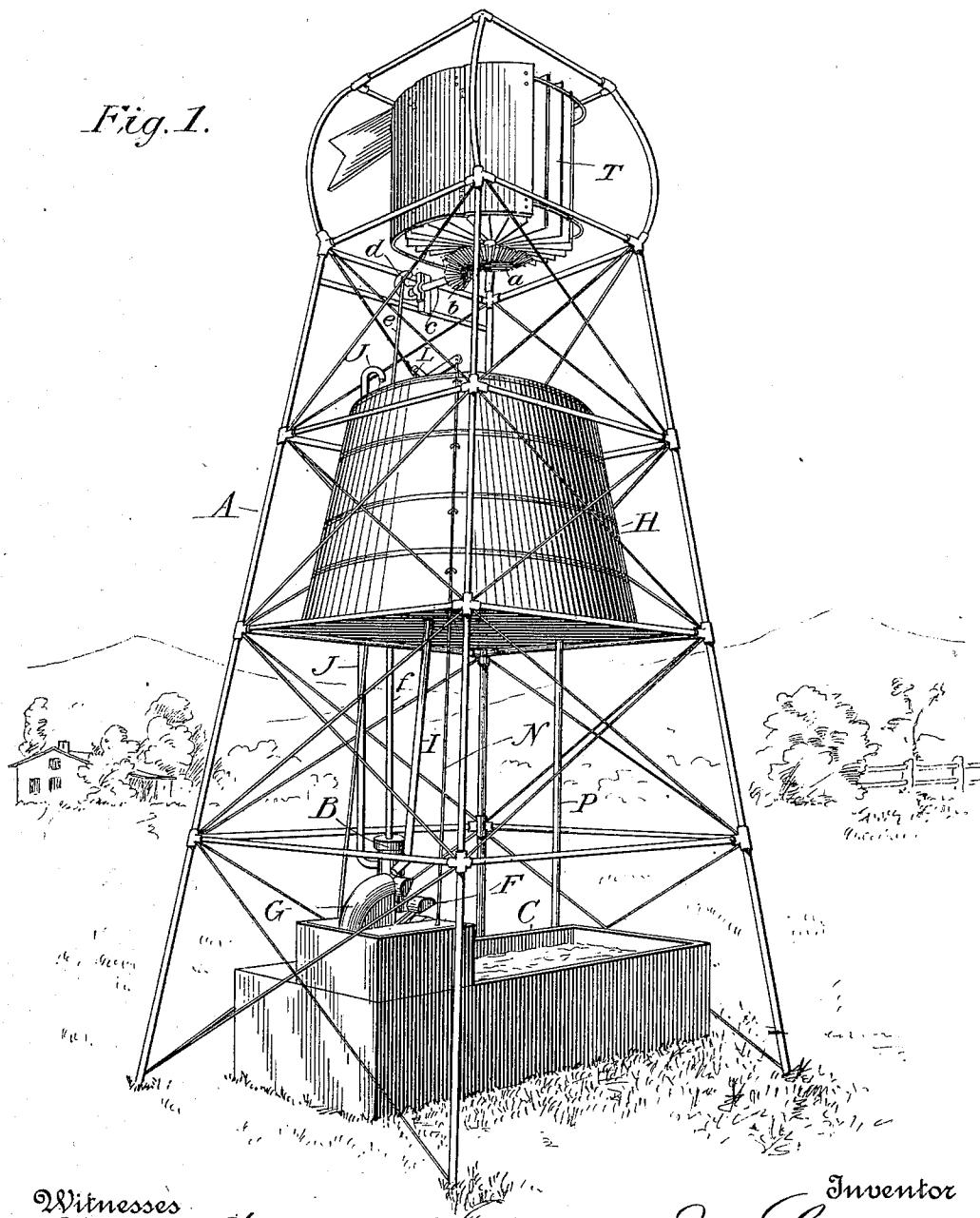
WIND AND WATER POWER PUMP.

(Application filed Nov. 10, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



Witnesses

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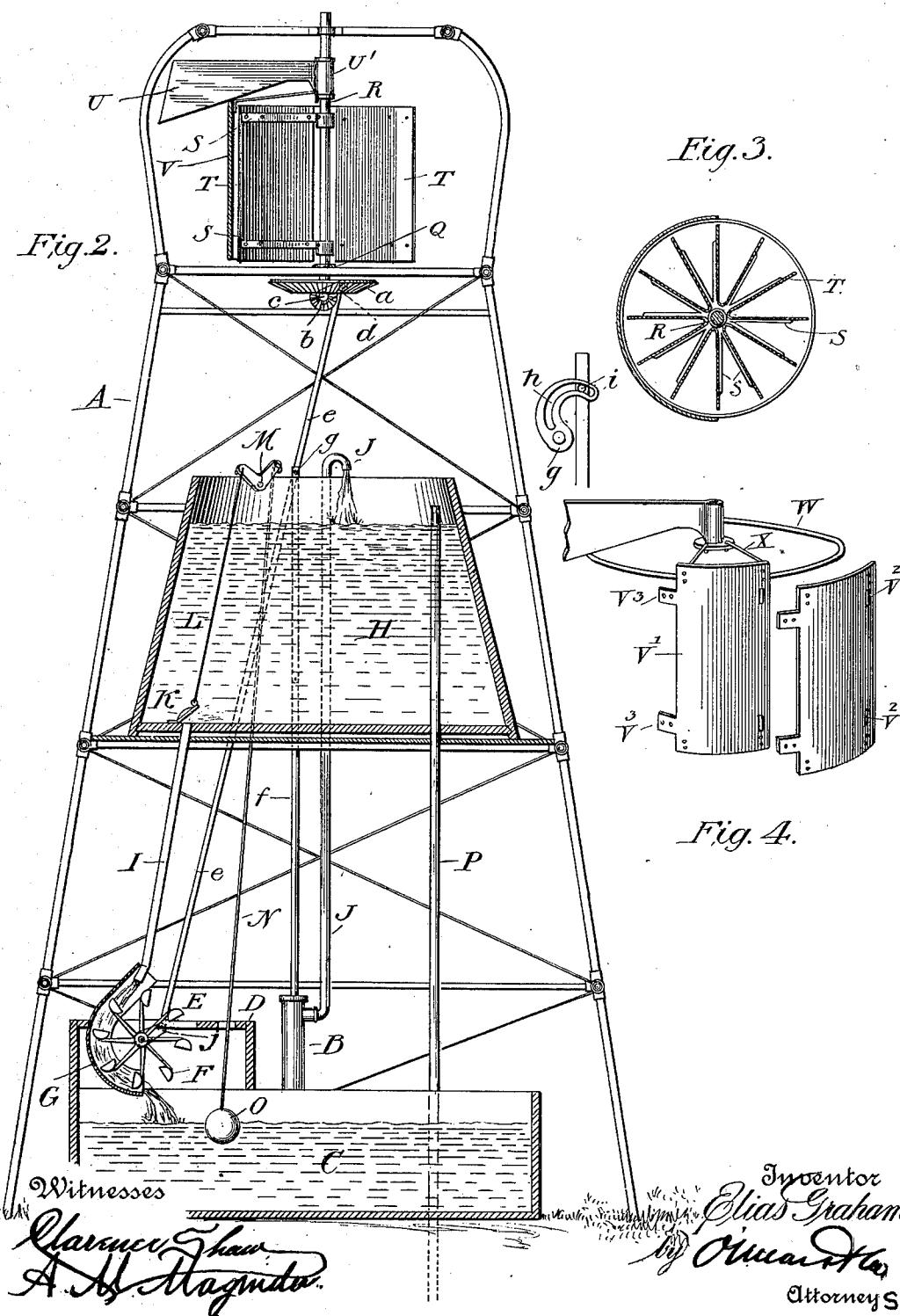
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WIND AND WATER POWER PUMP.

(No Model.)

(Application filed Nov. 10, 1900.)

2 Sheets—Sheet 2.



UNITED STATES PATENT OFFICE.

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WIND AND WATER POWER PUMP.

SPECIFICATION forming part of Letters Patent No. 672,762, dated April 23, 1901.

Application filed November 10, 1900. Serial No. 36,054. (No model.)

To all whom it may concern:

Be it known that I, ELIAS GRAHAM, a citizen of the United States, residing at HazeldeLL, in the county of Cumberland and State 5 of Illinois, have invented a new and useful Wind and Water Power Pump, of which the following is a specification.

This invention relates to improvements in pumping apparatus; and the object is to provide an improved pumping apparatus for the purpose of utilizing both water and wind power in performing the work of pumping.

With the above object in view the invention consists in the novel features of construction hereinafter fully described, particularly 15 pointed out in the claims, and clearly illustrated by the accompanying drawings, in which—

Figure 1 is a perspective view of a pumping apparatus embodying my invention; Fig. 2, a vertical longitudinal sectional view of the same; Fig. 3, a transverse section through the wind-wheel, and Fig. 4 a detail view of the shield and vane.

Referring now more particularly to the accompanying drawings, A designates a supporting-frame positioned adjacent to a pump B, which is designed to communicate with a well, (not shown,) and located near the bottom of the frame is a drinking tank or trough C. Mounted in the upright portion D of said tank or trough is a shaft carrying a water-wheel E, having buckets F. The buckets of said water-wheel move in a semicircular casing G as the wheel revolves, said casing supported upon the top of the upright portion D of the tank and over an aperture in said top through which the buckets turn.

Arranged in the supporting-frame above 40 tank C is a second tank H, having an outlet-pipe I at its lower end, which communicates with the upper end of the semicircular casing G. A supply-pipe J from the pump B communicates with the tank at its upper end and supplies the same with water as the piston of the pump is operated. The outlet-opening of the tank H is controlled by a valve K, having a valve-stem L, connected with a crank-shaft M, which crank-shaft is operated 45 by a vertically-movable float-rod N, extending downwardly into tank C and carrying a

float O. Said tank H is also provided with an overflow-pipe P, communicating with the well.

Supported above tank H in ball-bearings Q is a vertically-arranged shaft R, having 55 radially-extending arms S attached thereto adjacent to its upper and lower ends. Secured to these arms are the blades T of the wind-wheel. These blades are formed in pairs, each pair consisting of a piece of metal 60 or other material bent centrally to form two portions extending at an angle to each other and secured between two of the upper arms and two of the lower arms of the shaft.

U designates a vane having a sleeve U' 65 formed at its inner end, which is rotatable upon the shaft. Secured to the sleeve of the vane is a semicircular shield V, said shield being composed of plates V', each plate having slots V² formed near one edge and ears or lugs 70 V³ projecting from its opposite edge, the lugs of one plate entering the slots of the adjacent plate and being securely fastened therein. Each plate is secured at its upper end to a ring W and is also provided at its upper edge 75 with inwardly-extending arms X, which are secured to the sleeve of the vane. The shield rotates with the vane and is therefore constantly retained at one side of the windward side of the wind-wheel by the action of the 80 wind, and owing to this fact and to the fact that the shaft is arranged vertically and mounted in ball-bearings practically all of the friction is removed. The lower end of said shaft carries a bevel-gear a, meshing 85 with a bevel-gear b on the end of a short shaft c. This short shaft c carries a crank d, which is connected with and operates a connecting-rod e, which is in operative connection with the piston-rod f through the medium of an 90 arm g. This arm g is curved and is provided with a cam-slot h, receiving a pin i, carried by the piston-rod of the pump, the arm at its outer end being pivoted to the connecting-rod e. Thus as said rod is operated by 95 the wind-wheel the piston is reciprocated and water pumped into tank H. The lower end of said connecting-rod e is operatively connected to a crank j on the shaft of the water-wheel, so that as said water-wheel is 100 rotated the piston of the pump is also reciprocated.

It is my purpose to utilize the discharging water from the tank H as it passes through pipe I to the tank C to drive the water-wheel E as auxiliary power to assist the wind-wheel 5 in driving the pump.

In operation the tank H is filled by the pump, which is driven by the wind-wheel. When the water in tank C lowers sufficiently to cause the float to open the valve K, the 10 water from tank H will escape through pipe I and after passing by the water-wheel will enter and replenish tank C, and in so doing will drive the water-wheel, which, through its connections, will serve to assist the wind-wheel 15 in driving the pump. After the tank has been filled the float will automatically close the valve K, as will be readily understood.

Having thus fully described my invention, 20 what I claim as new, and desire to secure by Letters Patent, is—

A wind and water power pump, comprising in combination with a wind and a water wheel, gear, pitman-and-crank connections between said wheels, a vertically-movable pump-piston, a pivotal link connection between said piston and pitman, the trough with float therein, the tank with valve in its bottom, an angle-lever pivoted to said tank, a rod connected at one end to an arm of said lever, its 25 other end fastened to said float, a rod connecting the second arm of the lever with said valve, a hood about a portion of the water-wheel, and a pipe, the upper end of which is fastened in the valve-regulated outlet in the 30 tank, and its lower end bent and held against said hood, as shown and described.

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Witnesses:

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