

No. 672,762.

Patented Apr. 23, 1901.

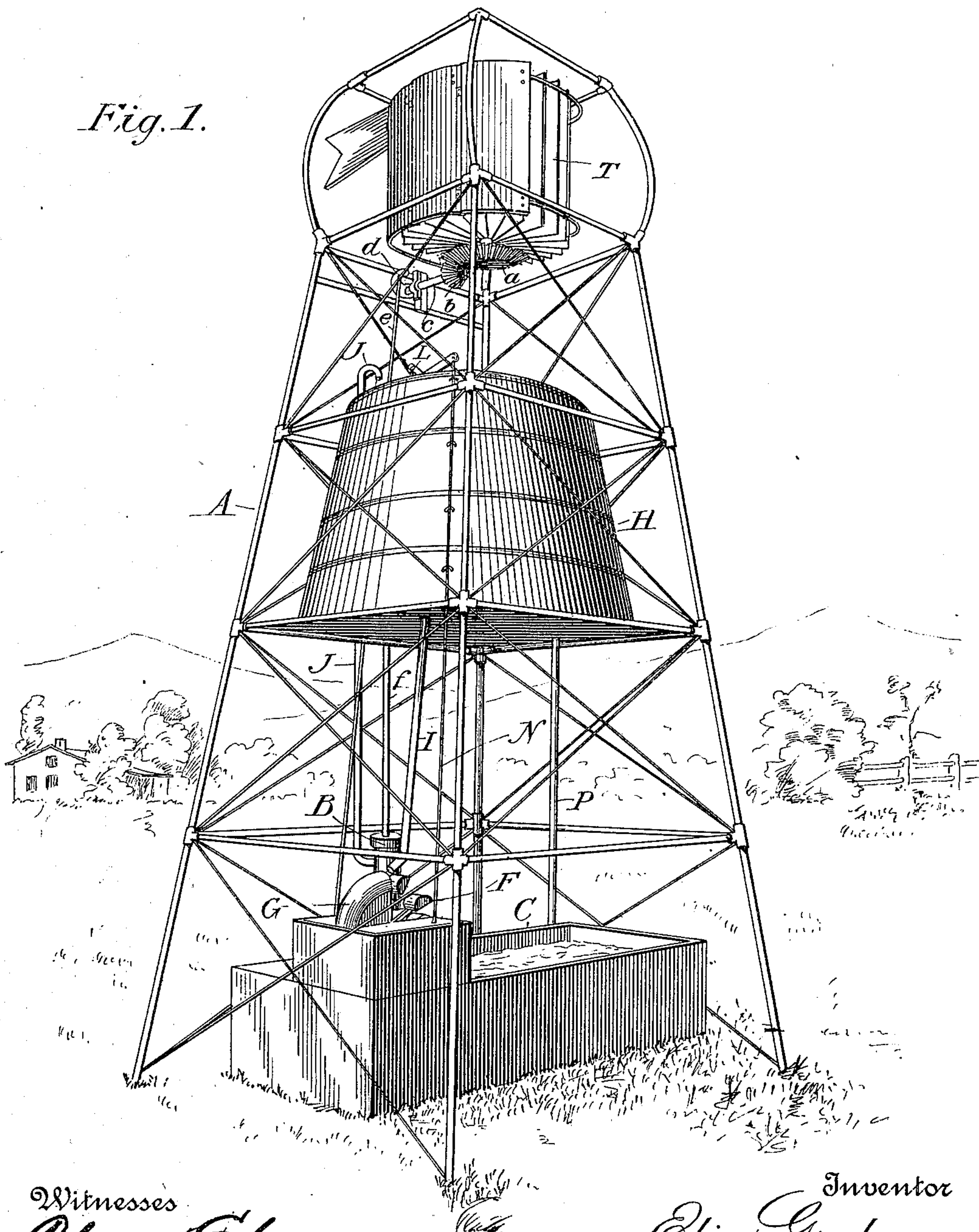
E. GRAHAM.
WIND AND WATER POWER PUMP.

(No Model.)

(Application filed Nov. 10, 1900.)

2 Sheets—Sheet 1.

Fig. 1.



Witnesses
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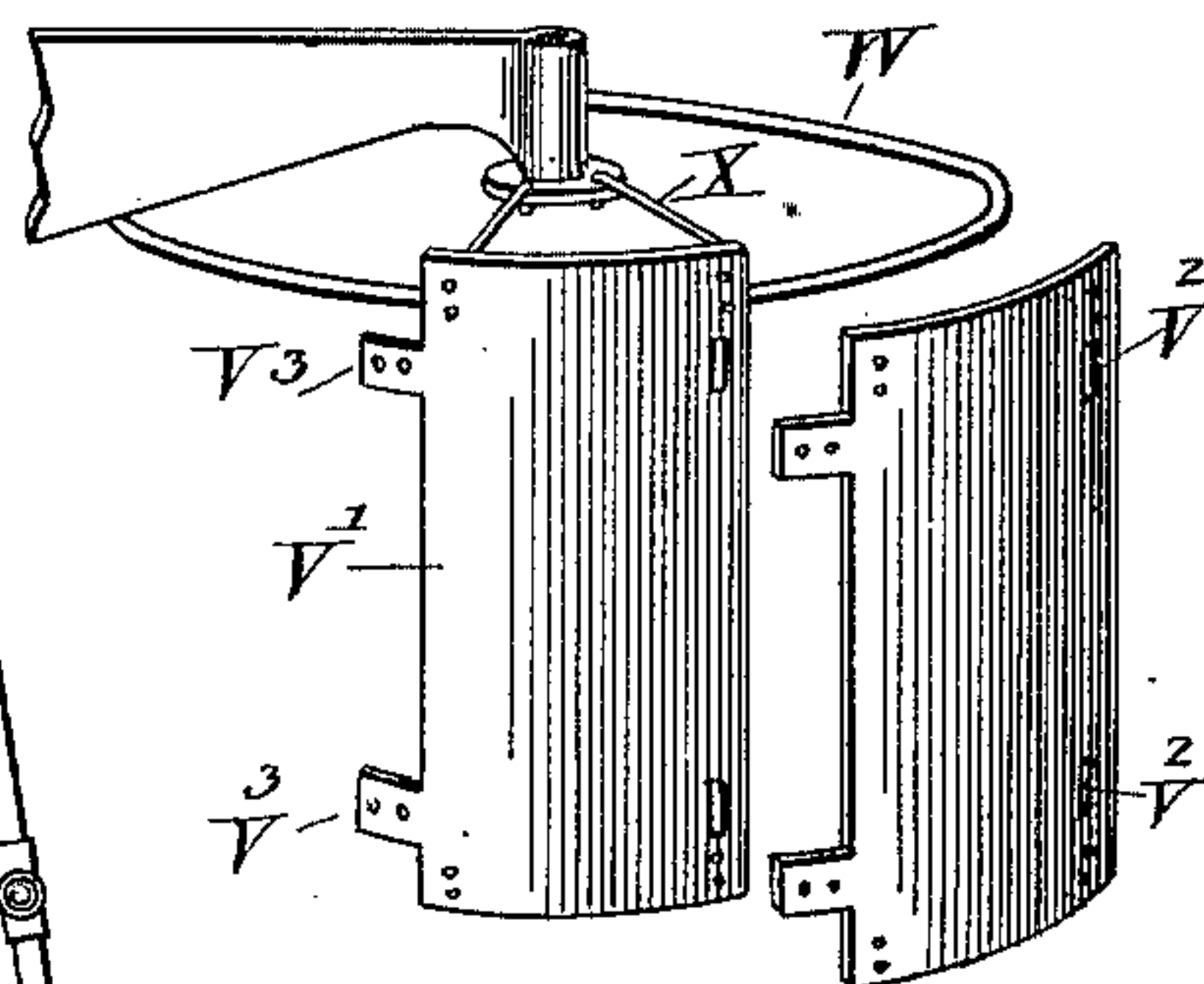
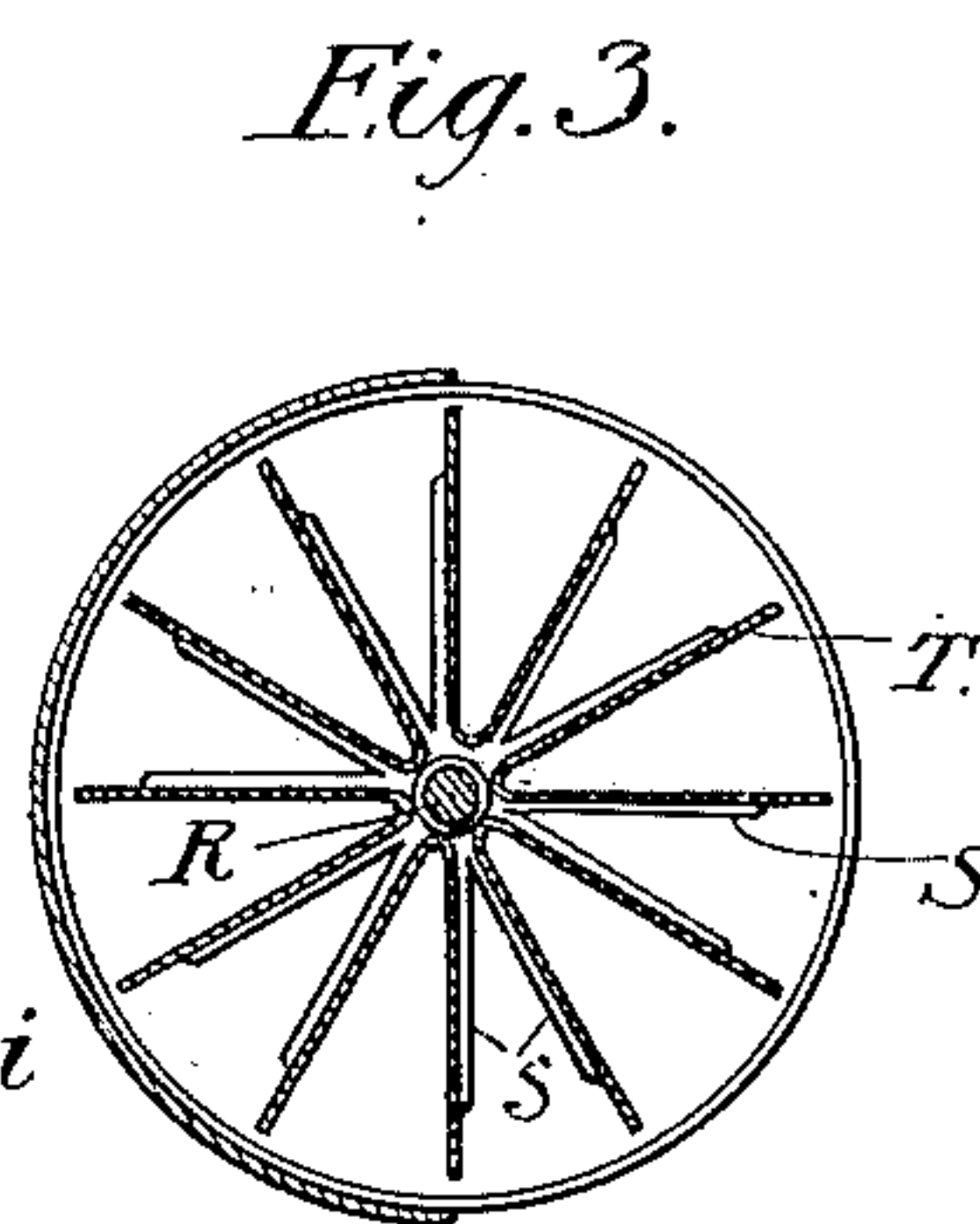
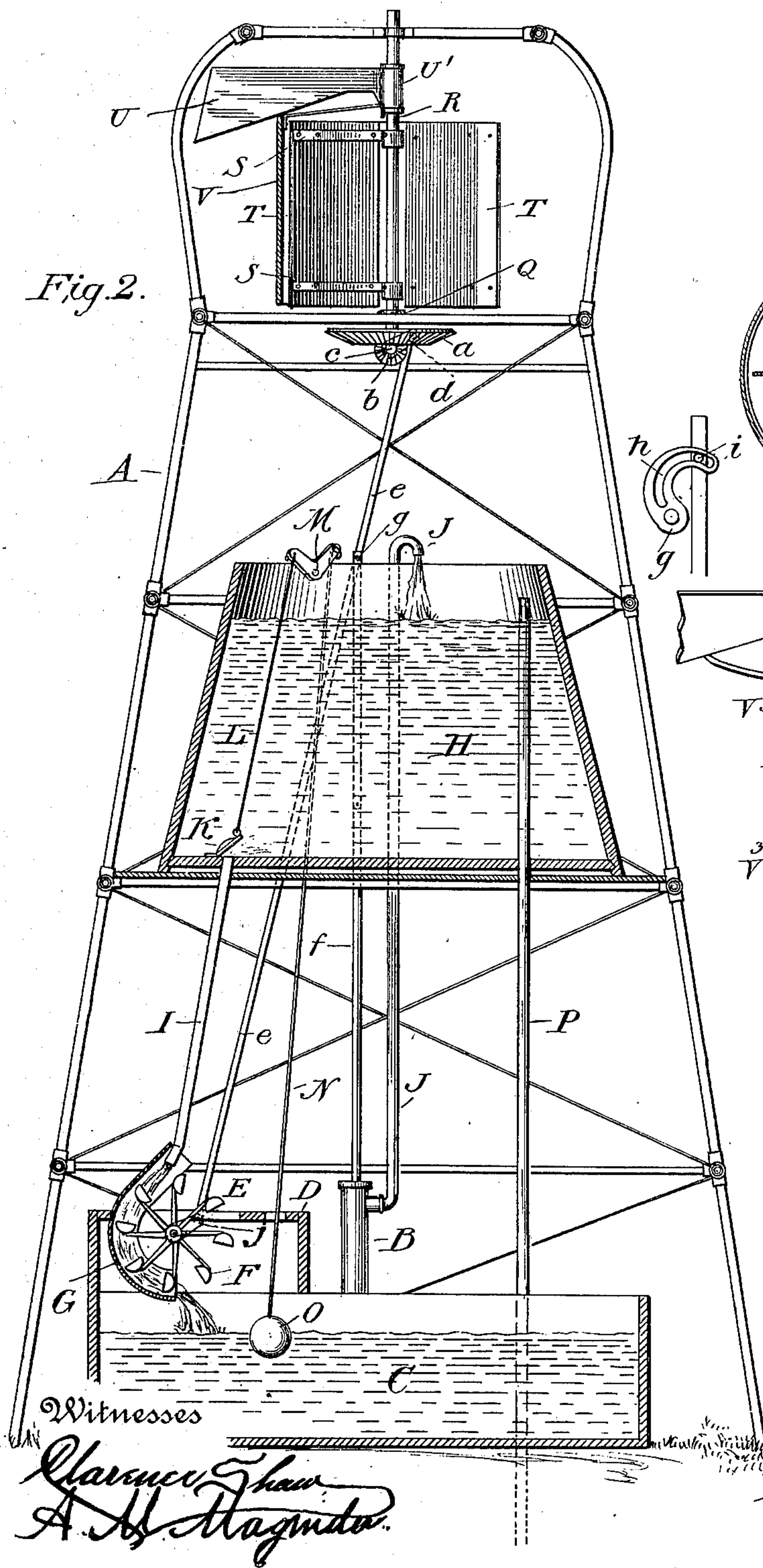
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WIND AND WATER POWER PUMP.

(Application filed Nov. 10, 1900.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses

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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 Hazel-
dell, 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 pro-
10 vide 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 inven-
tion consists in the novel features of construc-
15 tion hereinafter fully described, particularly
pointed out in the claims, and clearly illus-
trated by the accompanying drawings, in
which—

Figure 1 is a perspective view of a pump-
20 ing 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 ac-
companying drawings, A designates a sup-
porting-frame positioned adjacent to a pump
B, which is designed to communicate with a
well, (not shown,) and located near the bot-
30 tom 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 cas-
35 ing G as the wheel revolves, said casing sup-
ported 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 cas-
ing G. A supply-pipe J from the pump B
communicates with the tank at its upper end
45 and supplies the same with water as the pis-
ton 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
50 by a vertically-movable float-rod N, extend-
ing 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. Se-
cured 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 be-
ing composed of plates V', each plate having
70 slots V² formed near one edge and ears or lugs
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 con-
stantly 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 pro-
vided with a cam-slot h, receiving a pin i, car-
ried by the piston-rod of the pump, the arm
at its outer end being pivoted to the connect-
ing-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 recip-
rocated.

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-
15 wheel 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-pis- 25 ton, 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 30 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 35 tank, and its lower end bent and held against said hood, as shown and described.

ELIAS GRAHAM.

Witnesses:

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