

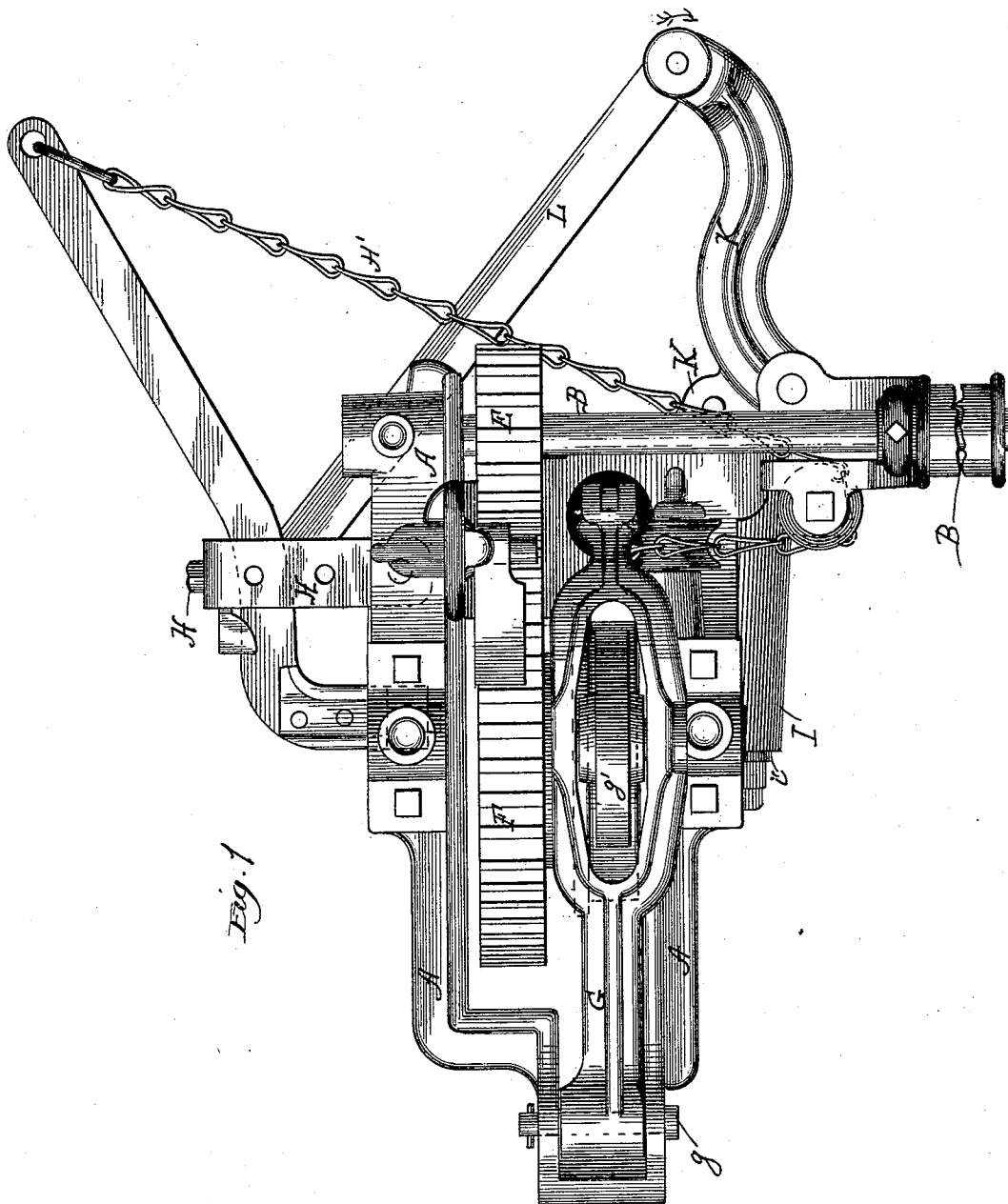
(No Model.)

3 Sheets—Sheet 1.

W. C. WESTAWAY & L. W. BEARD.
WINDMILL.

No. 471,406.

Patented Mar. 22, 1892.



Witnesses:

H. M. Hill.
M. E. Dayton

Inventors.

Walter C. Westaway,
Lewis W. Beard,

By Hill & Dixon
Their Attys.

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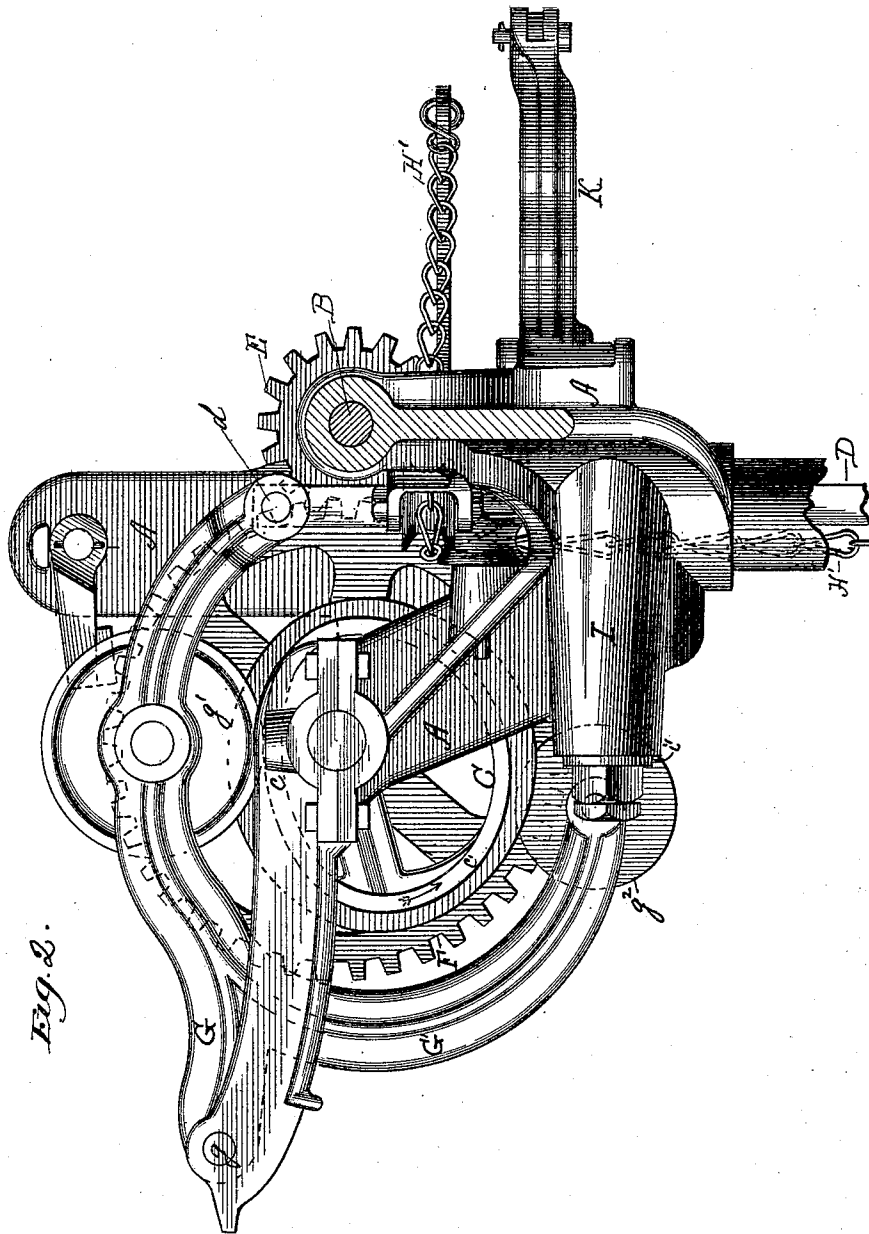


Fig. 2.

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Fig. 3.

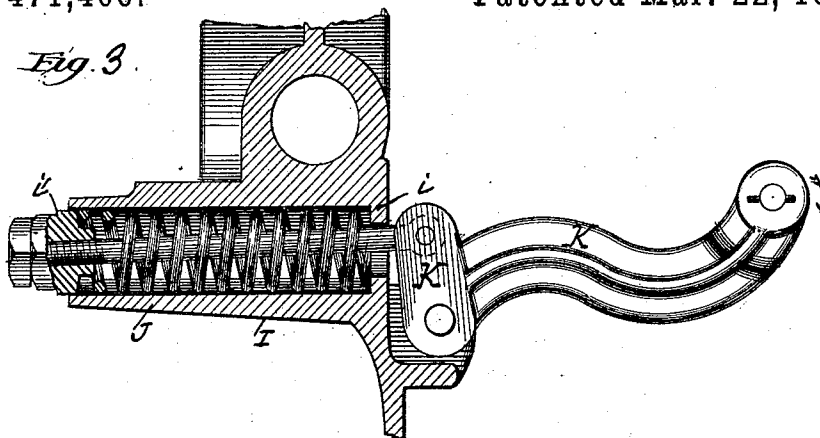
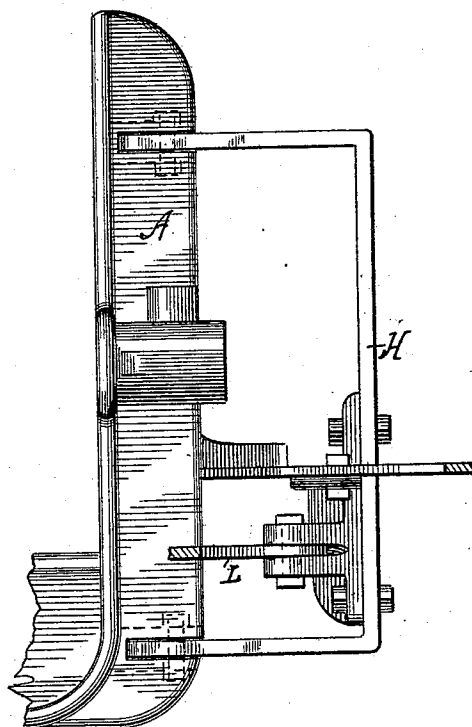


Fig. 4.



Witnessed:

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UNITED STATES PATENT OFFICE.

WALTER C. WESTAWAY AND LEWIS W. BEARD, OF DECORAH, IOWA, ASSIGN-
ORS TO THE DECORAH WINDMILL COMPANY, OF SAME PLACE.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 471,406, dated March 22, 1892.

Application filed November 3, 1890. Serial No. 370,203. (No model.)

To all whom it may concern:

Be it known that we, WALTER C. WEST-
AWAY and LEWIS W. BEARD, both citizens of
the United States of America, residing at Dec-
orah, in the county of Winneshiek and State
of Iowa, have jointly invented certain new
and useful Improvements in Windmills, of
which the following is a specification.

In the accompanying drawings, Figure 1 is
a top plan of the mill-head; Fig. 2, a side ele-
vation of the same in partial section; Fig. 3,
a sectional view showing the coiled spring
and the bell-crank lever; and Fig. 4, a partial
view in side elevation, with certain parts in
section, showing the junction of the connect-
ing-bar to the inner end of the tail-vane device.

Our invention relates to means in "solid-
head" windmills for resisting the lateral de-
flection of the wind-wheel out of the wind
with a force directly proportionate to the ex-
tent of such deflection.

In the drawings, A indicates the mill-head;
B, the wind-wheel shaft carrying the wind-
wheel B'; D, the vertical reciprocating rod,
by which the power of the wind-wheel is com-
municated to the pump-bucket; H, the tail-
vane; H', the usual cord or chain to enable
the attendant to throw the wind-wheel out of
the wind, and I a tube rigidly attached to the
mill-head. Within the tube I is a coiled
spring J, held in place by a flange *i* at one
end of the tube and a guiding-disk *i'*, which
fits into the tube at the other end.

K is a bell-crank lever fulcrumed to the
mill-head at *k*. Its long arm is connected to
the tail-vane by an articulated bar L, and its
short arm is articulated to a rod M, which ex-
tends into the tube I through the center of
the coiled spring J therein, and is connected
at the farther end of said spring with the
guiding-disk *i*, which leans against the end of
the spring and slides within the tube. When
the wind-wheel deflects out of the wind, the
lever K is thereby caused to move in the di-
rection indicated by the arrow, Fig. 1, com-
pressing the spring J more or less, according
to the extent to which the wind-wheel is lat-
erally deflected. Like all coiled springs its
resistance increases directly with the extent
of its compression, and therefore in this in-

stance directly in proportion to the extent of
the lateral deflection of the wind-wheel. The
increase of resistance thus afforded is not
sufficiently rapid for the best results, and
therefore we supplement the action of the
spring by the variable action of a lever or
system of levers to increase the effect. With
our construction it is not necessary to pro-
vide a special lever or system of levers for
this purpose, because we can avail ourselves
of the action of the tail-vane, the bar L, and
the bell-crank lever K to accomplish the de-
sired effect by simply arranging said parts
properly. To this end we connect the bar L
and lever K together at an angle not greater
than a right angle and so arranged as to be-
come the more acute the more the wind-wheel
is deflected out of the wind, thus progressively
reducing the leverage of the wheel against
the resisting-spring as such deflection in-
creases. To further aid this action, if deemed
necessary, the bar L may be connected to the
tail-vane at an angle less than a right angle
and so arranged as to gradually approach a
right angle as the wheel deflects out of the
wind, and thus increase the opposing leverage
of the tail-vane against such lateral deflec-
tion. With the increasing resistance of the
spring, the decreasing leverage of the wheel
against the spring, and the increasing lever-
age of the tail-vane against the wheel the
spring becomes more prompt and effective as
a regulator than even the old weight of vary-
ing resistance heretofore in general use.

Having thus described our invention, what
we claim as new, and desire to secure by Let-
ters Patent, is—

1. In a solid-head windmill, the combina-
tion of the mill-head and the pivoted tail-
vane with the coiled spring J, the bell-crank
lever K, supported by the mill-head, and the
bar L, connecting the long arm of the lever to
the tail-vane, substantially as described.

2. In a solid-head windmill, the combina-
tion of the mill-head, the pivoted tail-vane,
the coiled spring, the bell-crank lever, and
the bar L, connecting the long arm of the le-
ver to the tail-vane, said lever and bar being
so arranged that their angle to each other be-
comes more acute the more the wind-wheel is

laterally deflected from its normal position, substantially as set forth.

3. In a solid-head windmill, the combination of the mill-head, the pivoted tail-vane, 5 the coiled spring, the bell-crank lever, and the bar L, connecting the long arm of the lever to the tail-vane, said bar and tail-vane being so arranged that their angle to each other is caused to approach a right angle by 10 the lateral deflection of the wind-wheel from its normal position, substantially as described.

4. In a solid-head windmill, the combination of the mill-head, the pivoted tail-vane, the coiled spring, the bell-crank lever, and

the bar L, connecting the long arm of the lever 15 to the tail-vane, said bar and lever being so arranged that their angle to each other becomes more acute the more the wind-wheel is laterally deflected from its normal position and said bar and tail-vane being so arranged that 20 their angle to each other is caused to approach a right angle under the same conditions, substantially as described.

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Witnesses:

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L. HILL.