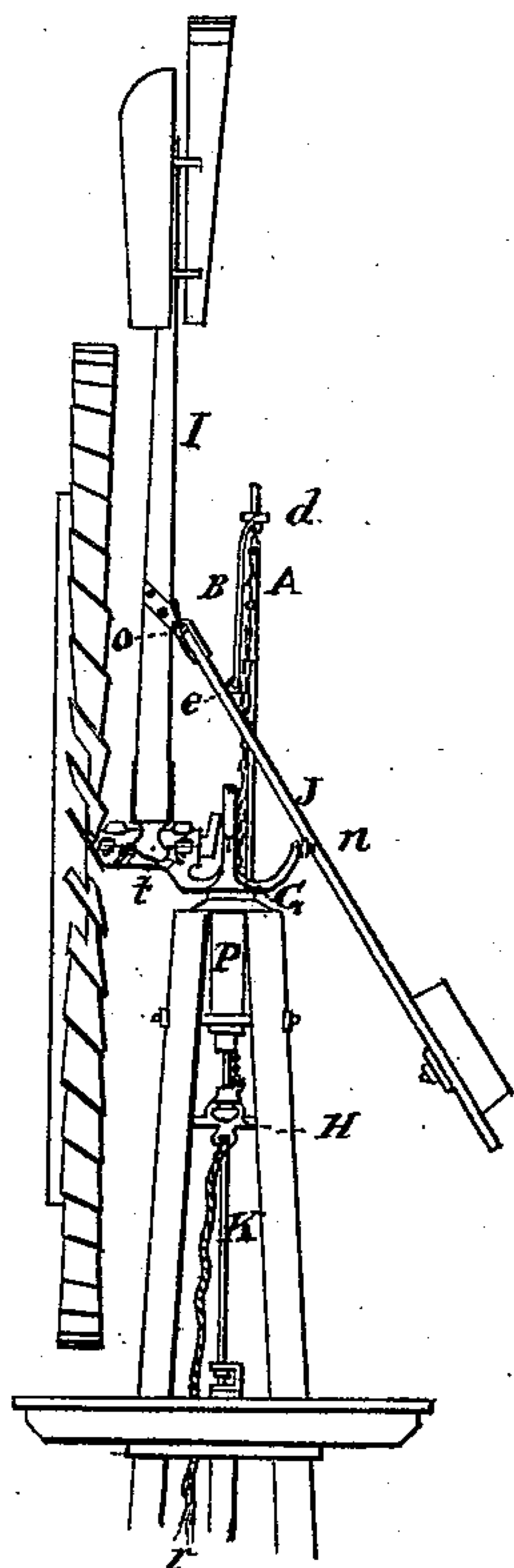


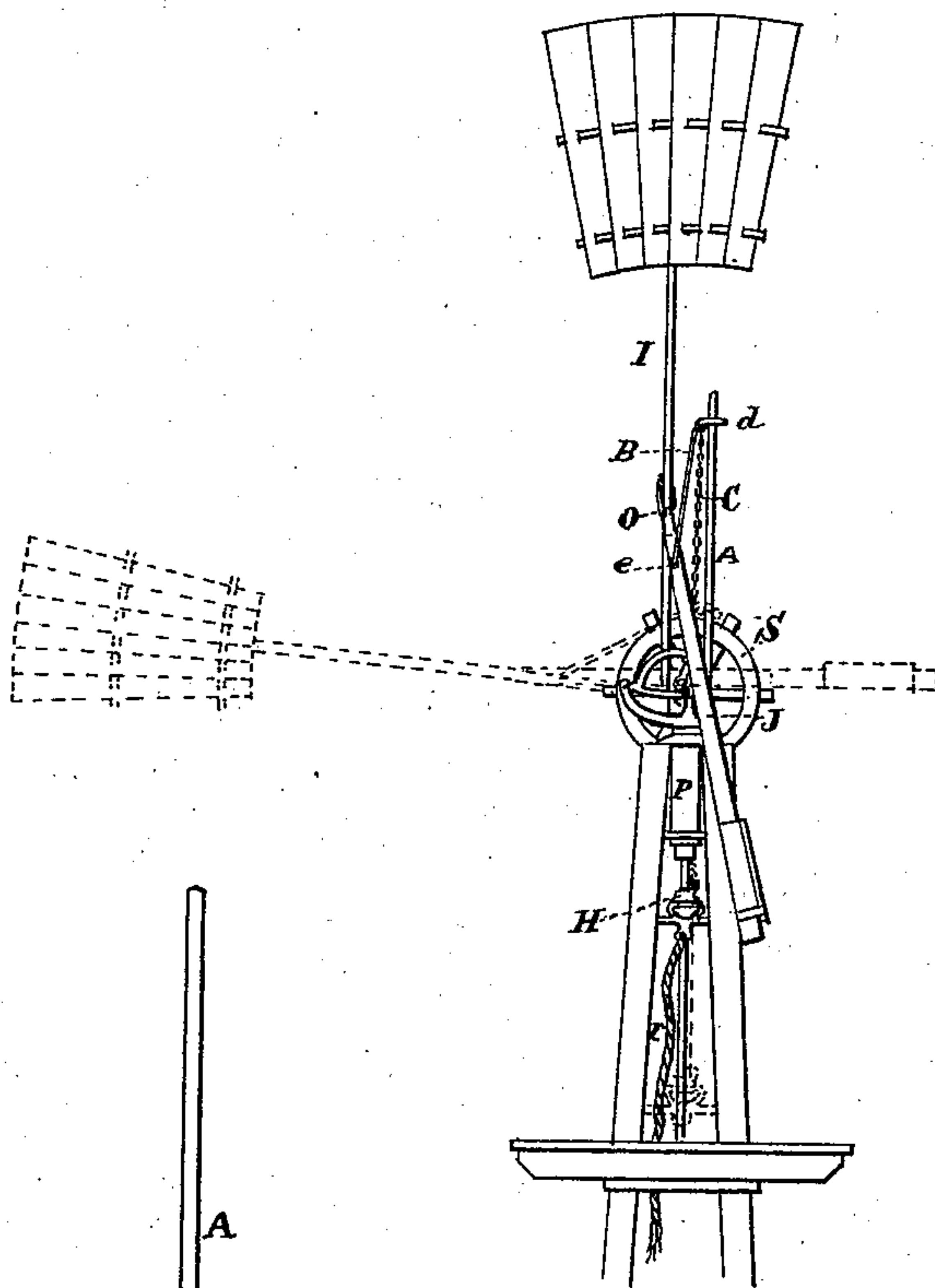
M. CROSSMAN.  
Windmill.

**No. 227,493.**

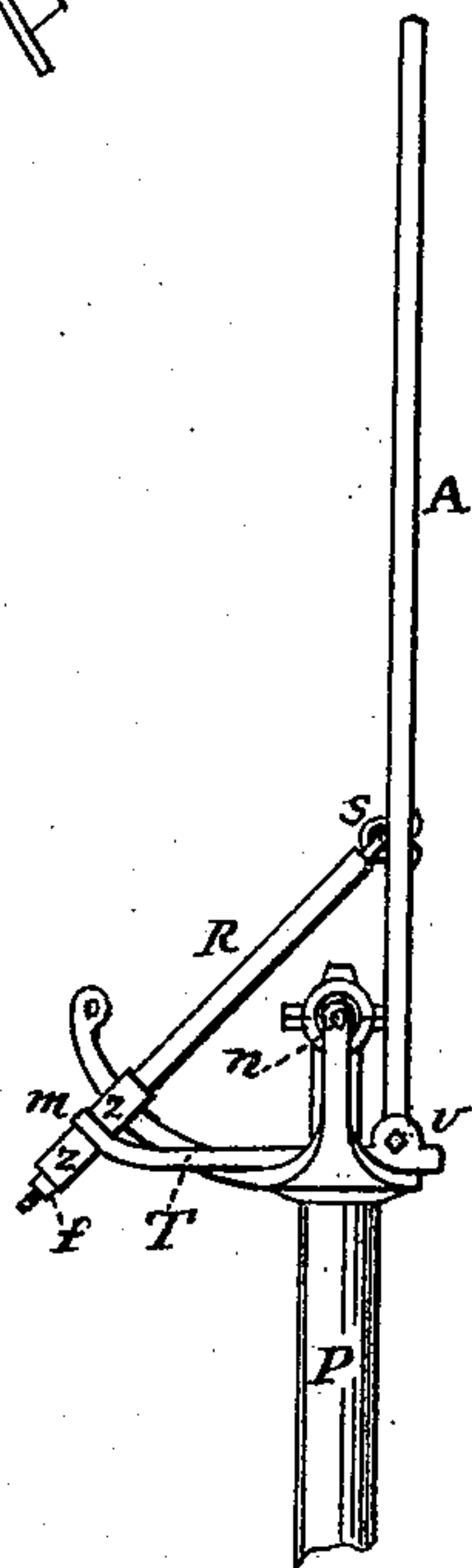
**Patented May 11, 1880.**



*Fig. 1*



**Fig. 2**



*Fig. 3*

*Witnesses*

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*Inventor*

Montgomery Crossman

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# UNITED STATES PATENT OFFICE.

MONTGOMERY CROSSMAN, OF GRAND HAVEN, MICHIGAN, ASSIGNOR OF  
ONE-HALF OF HIS RIGHT TO HUGH A. HOLMES, OF SAME PLACE.

## WINDMILL.

SPECIFICATION forming part of Letters Patent No. 227,493, dated May 11, 1880.

Application filed January 22, 1880.

*To all whom it may concern:*

Be it known that I, MONTGOMERY CROSSMAN, of the city of Grand Haven, county of Ottawa, State of Michigan, have invented certain new and useful Improvements in Windmills, of which the following is a full and exact description, reference being had to the accompanying drawings.

My invention relates to an improvement in the means of controlling the upright oscillating regulator-vanes used upon a certain class of windmills.

In the drawings, Figure 1 is a side elevation of the mill. Fig. 2 is a front elevation of the mill with the wheel left off, but showing the spider S, on which it is built. Fig. 3 shows one method of attaching the upright A to the top of the main pivot.

That this improvement may be clearly understood I give the following description.

The staff I of the vane is hinged at *t* to the bearing of the wheel-shaft. The weighted balance-lever is pivoted at *n* to a curved arm of the main pivot P of the mill, and at *o* is hinged to the vane-staff I.

The upright rod A is usually a piece of gas-pipe, and is sometimes set rigidly into the casting forming the top of the main pivot P, and sometimes attached as shown in Fig. 3, where T is a casting having an eye at *m* and a pair of ears at *v*. A bolt passing through the ears and the lower end of A allows of an oscillating motion. A rod passing through a piece of gas-pipe, R, and connected to the upright A by means of an eye and staple at *s*, and also through the eye *m*, secures the upright A in a vertical position. At *z z* are two pieces of cylindrical rubber. The whole is secured by a nut at *f*. The object of the rub-

bers *z z* is to relieve the upright A of sudden shocks from the rise and fall of the vane.

The thrust-rod B is hinged to the vane by connection with the balance-lever at *e*, and is so connected at its upper end, *d*, with the upright A as to slide freely up and down on A.

A light rod or chain, C, passing down through the main pivot P, connects the upper end of the thrust-rod B with the sliding collar H on the piston-rod K.

The mill is represented as standing in the wind, ready to run, and the operation of the controlling device is as follows: When it is desired to stop the mill, by turning the vane down to a horizontal position, the attendant seizes the rope *r* and draws the collar H, and with it the rod or chain C, downward, forcing the upper connection, *d*, of the rod B to slide down the upright A, producing a thrust upon the balance-lever J, causing the parts to take positions shown in Fig. 2 by the dotted lines.

This device is very simple both in construction and operation, and more easily handled than where chains passing over pulleys, changing their course several times, are used.

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

The device herein described for controlling the oscillating regulating-vanes of windmills, consisting of the upright A and thrust-rod B, in combination with the vane I and pivot P and connection C, substantially as herein shown and described.

MONTGOMERY CROSSMAN.

Witnesses:

SAMUEL L. TATE,  
HARRY N. ELKINGTON.