

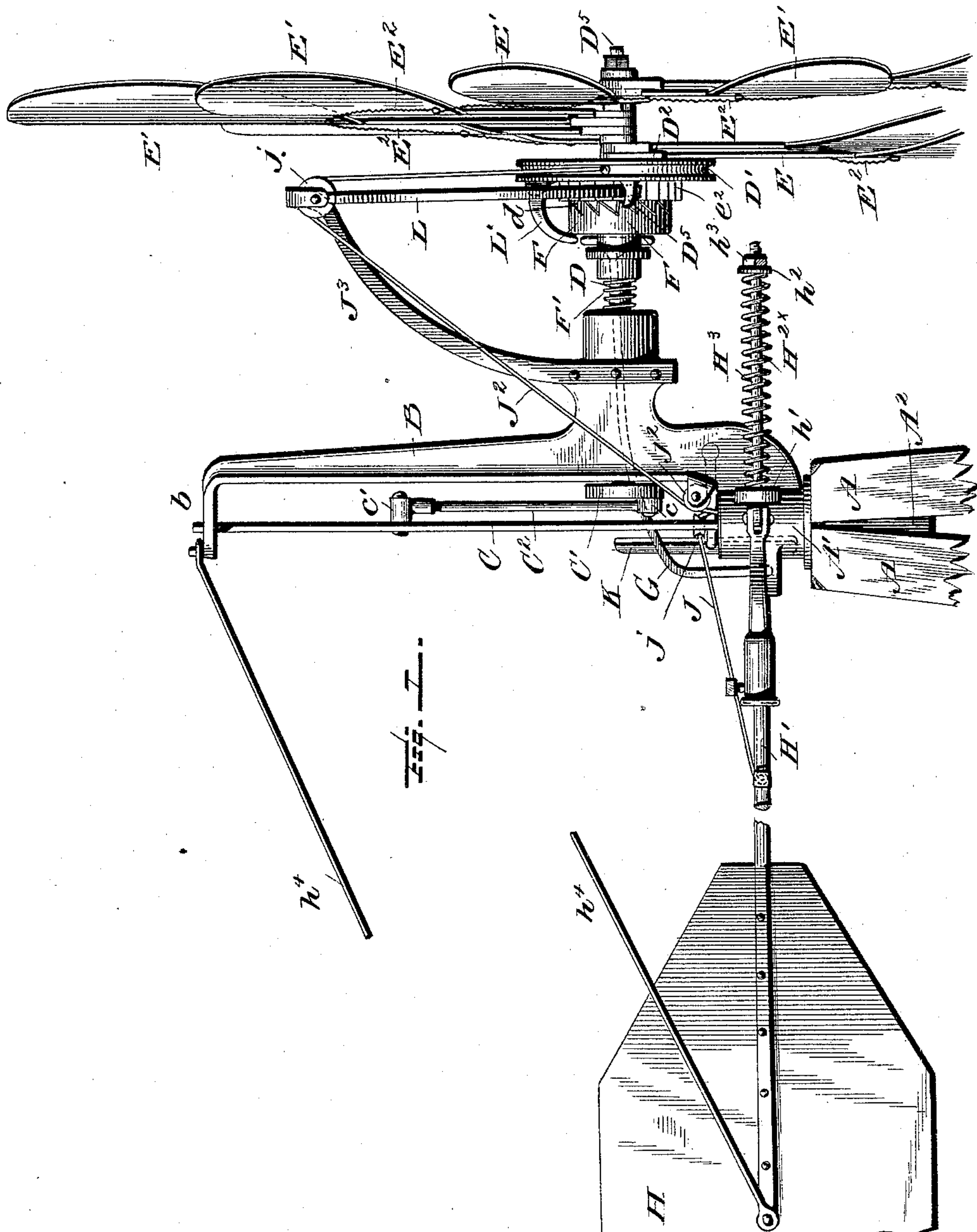
(No Model.)

2 Sheets—Sheet 1.

A. WALLACE.
WINDMILL.

No. 473,982.

Patented May 3, 1892.



Witnesses

L. C. Mills.
E. H. Bond.

Inventor

Amos Wallace
per *Chas. H. Fowler*
Attorney

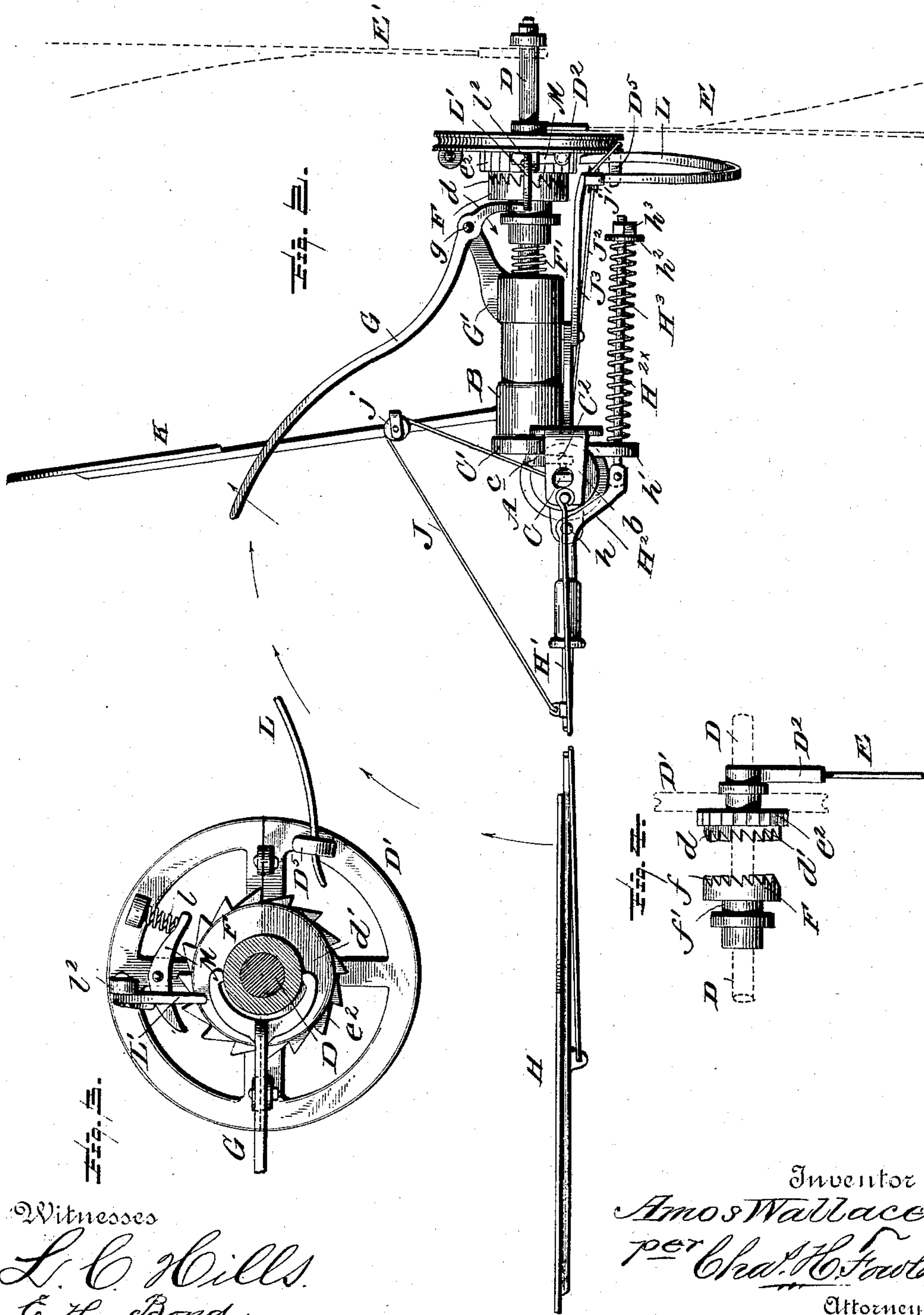
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UNITED STATES PATENT OFFICE.

AMOS WALLACE, OF LITTLE ROCK, IOWA.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 473,982, dated May 3, 1892.

Application filed October 31, 1891. Serial No. 410,436. (No model.)

To all whom it may concern:

Be it known that I, AMOS WALLACE, a citizen of the United States, residing at Little Rock, in the county of Lyon and State of Iowa, have invented certain new and useful Improvements in Windmills; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

This invention relates to certain new and useful improvements in windmills, and is designed more especially as an improvement upon the patent granted me November 25, 1890, No. 441,519.

It has for its objects, among others, to improve generally upon the construction therein shown, to provide improved clutch mechanism, to provide novel means for throwing the wheel into and out of the wind, and to simplify and cheapen the construction and render the device more efficient in operation.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a side elevation of sufficient of a windmill to illustrate my invention. Fig. 2 is a top plan thereof. Fig. 3 is an enlarged section through the main operating-shaft, looking from the inside outward. Fig. 4 is a detail of a portion of the clutch.

Like letters of reference indicate like parts throughout the several views in which they occur.

Referring now to the details of the drawings by letter, A designates a portion of the tower, which may be of the usual construction. Upon it is supported the casting A', from which depends the tube A², through which the pump-rod passes in the usual manner.

B is a casting, which forms a support for the main operating-shaft and is provided with a lateral portion b, forming a guide for the upper end of the pump-rod, as seen in Fig. 1. The pump-rod C is given the up-and-down

movements by means of the cam-disk C' on the main operating-shaft, the said disk being provided with a wrist-pin c, to which is connected the pitman C², which is suitably connected with the pin or lateral extension c' on the upper end of the pump-rod, as seen in Fig. 1, all so arranged that the revolution of the main shaft and wheel causes the pump-rod to reciprocate vertically in the usual manner.

D is the main shaft. It is journaled in suitable bearings in the casting B and has sleeved thereon near its outer end the wheel D', which is grooved upon its periphery, as seen in Figs. 1 and 2. This wheel has rigid thereon an arm D², to which is fixedly secured the inner blade E, which may be of any well-known or preferred form of construction. The other blades E' are loosely sleeved upon the main shaft, but are all connected together and to the inner blade E by means of a chain or cord E² in a manner similar to the blades of the wheel in the patent above referred to, so that when the wheel turns all the blades turn with it. This wheel is preferably constructed in two pieces connected together in any suitable manner, as seen in Figs. 2 and 3, and upon its inner face it is provided with ratchet-teeth d, as shown in Figs. 1, 2, and 4, and upon the periphery of the hub or boss d' with teeth, with which is designed to engage a pawl, hereinafter described. These teeth are best seen in Fig. 3, where they are lettered e².

Fast upon the main shaft is the clutch-wheel F, so arranged as to revolve therewith, but capable of longitudinal movement upon the shaft. This may be accomplished in any suitable manner. It is provided with clutch-teeth f to engage the teeth d when the wheel is moved in that direction, so that the wheel D' will revolve with the shaft; but when the clutch-wheel is disengaged the wheel D' will not revolve with the shaft. A spring F' around the shaft serves to normally keep the clutch members in engagement with each other.

The clutch-wheel has a groove f', into which is fitted the forked end of the lever G, which is pivoted at g to an arm or bracket G' on the casting B, as seen best in Fig. 2, with its free end arranged in the path of the tail-vane H,

which is carried by the arm H' , pivoted at h to the casting A' and having a short arm H^2 extending beyond its pivot, as seen in Fig. 2, and to which is pivotally connected the arm or rod H^{2x} , which passes through a guide h' , and between this guide and a washer or other suitable provision h^2 on the end of the arm or rod H^2 is confined around the arm or rod a spring H^3 , as seen in Figs. 1 and 2, the spring being regulated by a nut h^3 on the end of the rod or arm, as shown. The vane may be suitably braced, as by the brace-arm h^4 .

J is a chain or cord attached at one end to the arm of the tail-vane, thence passes over a pulley j on the side vane K , and then down through the guide-tube A^2 .

J^2 is another chain or cord having one end attached to the wheel D' , as seen in Fig. 1, and thence passes over a pulley j' , carried by the overhanging arm J^3 , and thence downward over a pulley j^3 and through the guide-tube, as seen best in Fig. 1. On the inner face of the wheel D' is a lug D^5 , upon which is designed to ride the free end of the spring-arm L , the other end of which is attached to the arm J^3 , as seen in Figs. 1 and 2.

M is a dog or pawl adapted to engage the ratchet-teeth e^2 of the wheel D' , as seen in Fig. 3. It is normally kept out of engagement with the ratchet by the spring l , acting upon its tail end, as shown best in Fig. 3. It is held in engagement by the arm L' , which is hinged to the lug l^2 on the inner face of the wheel D' , as shown in Fig. 3, which is curved downward, as seen in Fig. 1, and is operated by the movement of the clutch-wheel F when the latter is moved.

The operation will be readily understood from the foregoing description when taken in connection with the annexed drawings, and a detailed description thereof is not deemed necessary. With the clutch members engaged the wheel revolves with the shaft and the pump-rod is reciprocated up and down. If the power of the wind increases, the chain or rope J draws the vanes together and the tail-vane H strikes the lateral arm G , which separates the clutch members and opens the arm that holds the dog in engagement with the ratchet-wheel, and thus the chain J^2 is wound upon

the wheel D' and the sails roll down to a closed position.

The parts are simple, durable, easily assembled or separated for the purpose of repairs, and in practice the device has proved most efficient for the purposes for which it is intended.

What I claim as new is—

1. The combination, with the folding wheel and its hub, of the clutch for engaging therewith, the lever for operating the clutch, the ratchet and pawl actuated through the movement of the clutch, and the hinged arm on the wheel engaging the pawl, as set forth.

2. The combination, with the folding wheel and its hub, of the clutch for engaging therewith, the lever for operating the clutch, the ratchet-wheel, the wheel on the main shaft, the cord connected therewith, the hinged downwardly-curved arm L' on the wheel on the shaft, and the spring-pawl acting on the ratchet, as set forth.

3. The combination, with the folding wheel and its hub, of the clutch engaging therewith, the lever for operating the clutch, the tail-vane for operating the lever, the lug on the loose member of the clutch, the hinged downwardly-curved arm L' , and the spring-arm acting on the said lug, as set forth.

4. The combination, with the folding wheel and its hub, of the clutch for engaging therewith, the lever for operating the clutch, the tail-vane, the side vane, the cord-supporting pulley on the shank of the side vane, a cord passed thereover for operating the main vane, the lug on the loose member of the clutch, and the spring-arm acting on said lug, as set forth.

5. The combination, with the fast and loose members of the clutch, of the lug on the loose member, the arm J^3 , and the spring-arm attached to one end of the arm J^3 and acting on the said lug, substantially as and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

AMOS WALLACE.

Witnesses:

W. H. GREEN,

E. T. SMITH.