

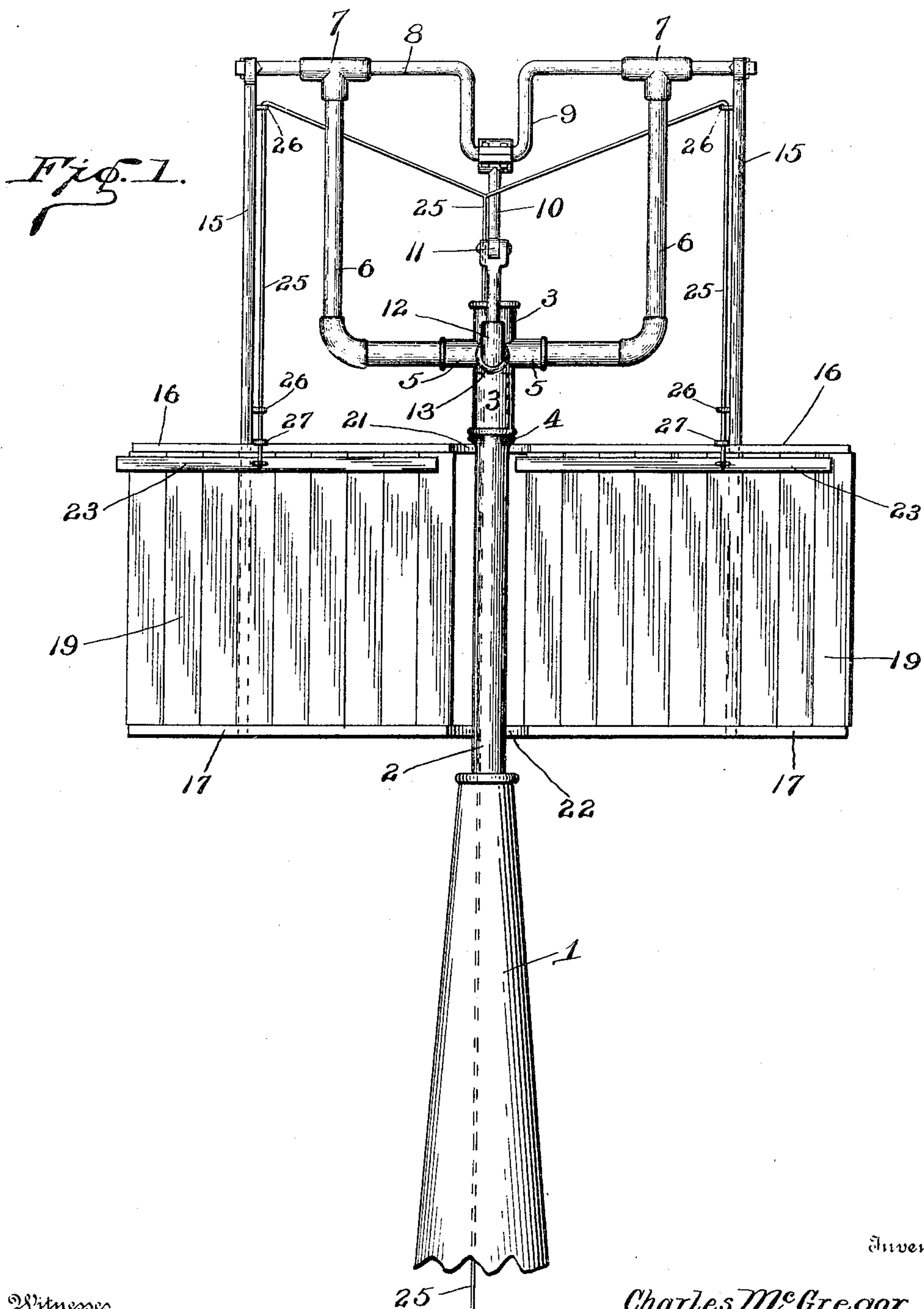
No. 804,257.

PATENTED NOV. 14, 1905.

C. MCGREGOR.
WIND ENGINE.

APPLICATION FILED OCT. 28, 1902. RENEWED JUNE 22, 1905.

2 SHEETS—SHEET 1.



Inventor

Charles McGregor,

Witnesses

C. S. Frye
A. H. Miller.

By

Henry W. Blair, Attorney

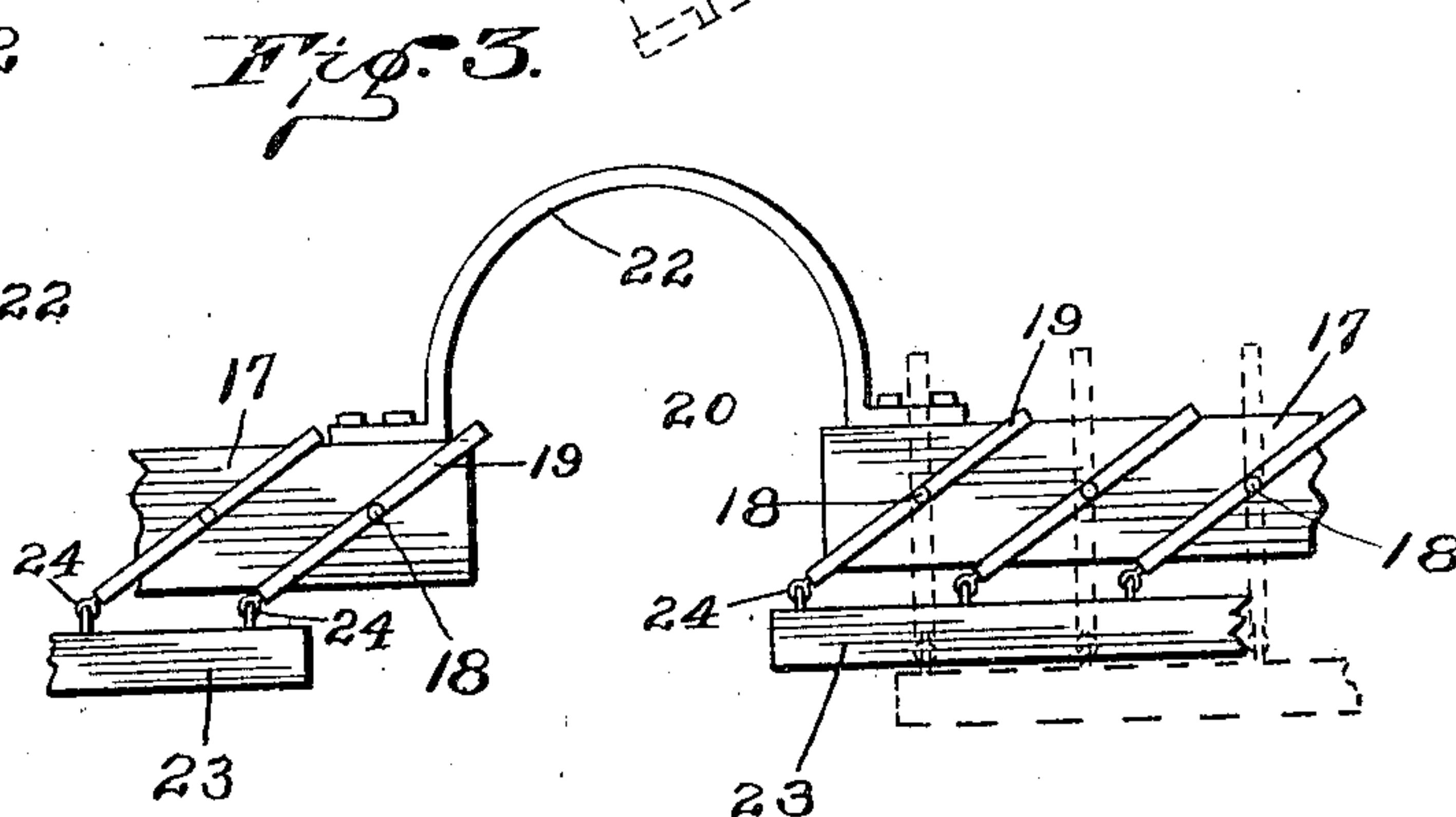
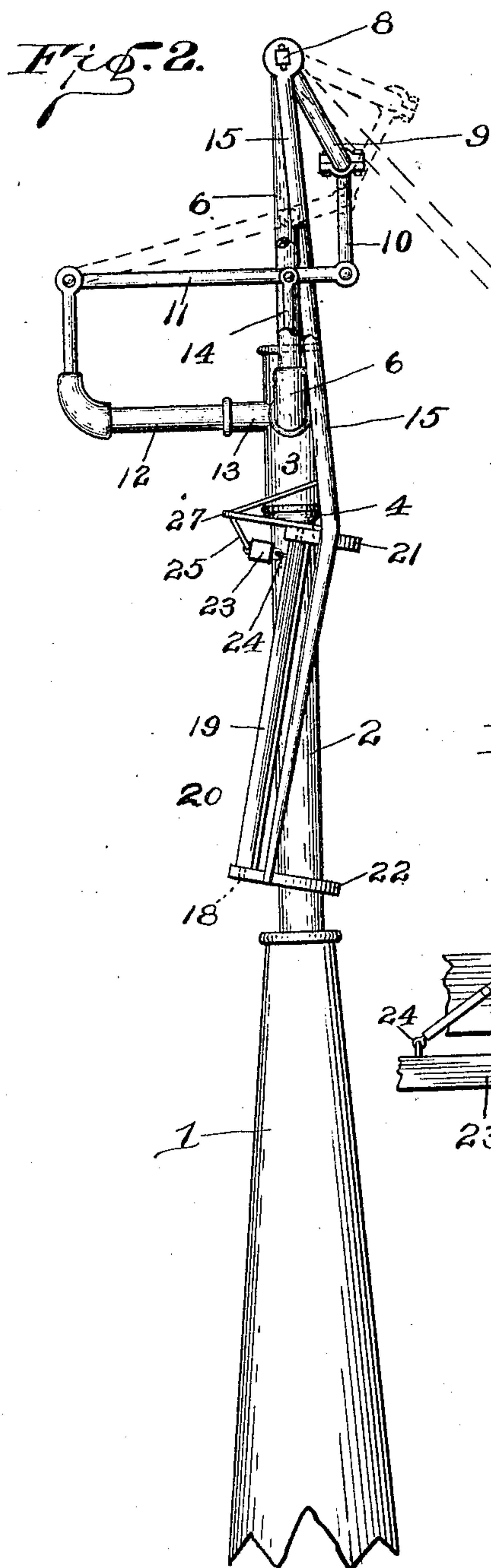
No. 804,257.

PATENTED NOV. 14, 1905.

C. MCGREGOR.
WIND ENGINE.

APPLICATION FILED OCT. 28, 1902. RENEWED JUNE 22, 1905.

2 SHEETS—SHEET 2.



Inventor

Charles M. McGregor,

Witnesses

C. S. Pye
A. G. Miller

By

Henry W. Blair Attorney

UNITED STATES PATENT OFFICE.

CHARLES MCGREGOR, OF NASHUA, NEW HAMPSHIRE, ASSIGNOR OF TWO-THIRDS TO JOHN C. MCGREGOR, OF NASHUA, NEW HAMPSHIRE, AND HENRY W. BLAIR, OF MANCHESTER, NEW HAMPSHIRE.

WIND-ENGINE.

No. 804,257.

Specification of Letters Patent.

Patented Nov. 14, 1905.

Application filed October 28, 1902. Renewed June 22, 1905. Serial No. 266,505.

To all whom it may concern:

Be it known that I, CHARLES MCGREGOR, a citizen of the United States, residing at Nashua, in the county of Hillsboro, State of New Hampshire, have invented certain new and useful Improvements in Wind-Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to wind-engines, commonly termed "windmills;" and it consists of certain novel features of combination and construction of parts, the preferred materialization whereof will be clearly set forth in the following specification and illustrated in the accompanying drawings.

The object of my invention, among others, is to provide a motor of the character specified which shall possess a maximum degree of power consistent with a minimum number of cooperating parts.

A further object of my invention is to provide certain cooperating mechanism which will render my wind-engine reliably automatic in character, whereby it will be perfectly adapted to meet all of the conditions and the severe strain placed upon it incident to high and varying winds.

A further object, among others, is to provide a motor which will practically require no attention whatever from the operator and which will be especially adapted for the performance of all of the operations of pumping and for the propulsion of various kinds of machinery, &c.

Other objects and advantages will be hereinafter made clearly apparent, reference being had to the accompanying drawings, which are made a part of this application, and in which—

Figure 1 is a front elevation of my device in its operative position. Fig. 2 is an edge elevation thereof, and Fig. 3 is a top plan view of a portion of the propelling-sail with parts thereof removed.

Referring to the drawings, in which similar reference-numerals designate corresponding parts, 1 indicates a suitable supporting-frame, the said frame carrying at its upper end a hollow tube or shaft 2. Fitting down over the upper end of the shaft 2 is the cylindrical head 3, the said head finding a bearing upon

a ledge 4, carried by the shaft 2. Extending at right angles from the side of the head 3 are sockets 5, into which take sections of the supporting-frame 6.

Carried in suitable bearings 7 at the upper end of the supporting bars or frame 6 is a crank-shaft 8. At a central point in the length of the shaft 8 a portion of the shaft is bent to form a crank 9, to which is secured one end of a pitman 10, the opposite end of said pitman being pivotally attached to one end of the pumping-lever 11. The opposite end of the lever 11 is carried by a suitable bracket 12, which is in turn carried by a socket 13, formed integral with the head 3.

Pivotally attached to the lever 11 at any convenient point is the pump or suck rod 14, which may be of any preferred construction.

The outer ends of the shaft 8 are squared and receive the upper ends of the said supporting-arms 15, the said ends having squared openings adapted to fit snugly over the squared portions of the shaft 8. Thus when the arms are carried outward or inward the crank-shaft is caused to oscillate accordingly.

Secured to the lower portion of the arms 15 are bars 16 and 17, respectively, into which are seated the pivot-points 18 of the blades 19, the said bars or plates 16 and 17 and blades 19 when properly assembled forming the sail proper, 20. The sail is constructed in two sections which are held in conjunction with each other by means of curved straps 21 and 22, as shown. The object of so constructing the said sail is to permit the sail to complete its downward stroke without coming in contact with the shaft 2.

As shown more clearly in Fig. 3 of the drawings, weights 23 are yieldingly attached to the blades 19 by means of eyebolts 24 or their equivalents, an eyebolt taking into one edge of each blade, by which means all the blades are opened or closed simultaneously.

In operation, supposing the sail to be in the position shown in full lines in Fig. 2, the weight 23, in conjunction with the wind, will cause the blades 19 to close or assume the position shown by the full lines in Fig. 3, when the sail and cooperating parts will be forced outwardly by the wind to the position shown in dotted lines in Fig. 2, when the weight 23 will pull outwardly upon the blades 19 and cause them to open or assume the position

shown by dotted lines in Fig. 3, thus permitting the wind to pass directly through the sail between the blades, thus relieving the pressure of the air against the sail and permitting the same to drop back to its former position, when the blades will again close and the sail be carried out as before described. It will now be seen that by having the ends of the crank-shaft 8 squared and the orifices in the arms 15 correspondingly squared when the sail is driven outwardly the shaft 8 is rotated, thus elevating the cranked portion 9 and lifting the pump-rod 14 upward through the medium of the piston 10 and lever 11, and when the sail returns the pump-rod is driven downwardly again.

It becomes desirable at times to stop the operation of the sail, and to this end I have provided a wire 25 or the like, the said wire being adapted to pass down through the hollow shaft 2 to any convenient point near the ground. The upper end of the wire is in two sections, one section passing to the right and one to the left until they reach the arms 15, where they pass through suitable eyelets 26, carried by said arms, thence through an eye in the arms 27, carried by the bars 16, and thence to an eyelet in the weights 23, to which they are securely attached, so that when it is desired to stop the operation of the sail the operator pulls the wire 25 taut, thus drawing the weights 23 outwardly from the sail and opening the blades, thus allowing the air to pass through the sail, the said sail being kept inactive the proper length of time by so securing the wire as to keep it taut and hold the sail open.

Owing to the fact that the head 3 is swivelly mounted upon the end of the shaft 2, the framework carrying the sail is free to turn in any direction, thus allowing the sail to shift with the wind and always keep it in operative position thereto.

For expediency and economy of construction it is obvious by reference to the drawings that the major portion of the framework and supports for the bearings may be expeditiously and reliably formed from proper sections of gas pipes and fittings commonly available in any part of the country, thereby affording a desirable framework or support of the desired rigidity and strength, though it is obvious that said framework and other parts may be formed of any preferred material deemed most suitable for the purpose, and while I have described the preferred combination and construction of parts deemed necessary in materializing my ideas I wish to comprehend in this application all possible substitutes and equivalents which may fairly fall within the scope of my invention.

It will be readily appreciated by reference to the foregoing description and accompanying drawings that I have provided a wind-motor which will be sensitively responsive to

a high or low wind-pressure and that should storm conditions prevail there will be a minimum strain placed upon the supporting-framework and other parts, inasmuch as the sail will ride substantially into a horizontal plane and present only the least resistance to the storm; but said sail will again drop into an operative position by the force of gravity and continue to reciprocate in its fixed path, the result being that the pump rod or piston will be operated to drive the pump or other object operatively connected thereto. It will thus be observed that the sail of my wind-motor will act as a vane to hold itself truly to the wind, inasmuch as the support is arranged to rotate whereby the sail can freely swing in the arc of a circle.

Having thus fully described the construction and operation of my improved wind-engine, further description is deemed unnecessary.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a wind-engine, the combination with a suitable support, of a rock-shaft carried by said support, a piston-rod and means to connect it to said shaft; a wind-actuated sail connected to said shaft and adapted to reciprocate from a substantially vertical into a substantially horizontal plane said sail being formed in two parts connected together by curved members 21 and 22 adapted to compensate for the position of the support and permit the sail to fall into a vertical position, as set forth.

2. In wind-motors, a suitable supporting-standard having a tubular terminal; a piston-rod adapted to reciprocate in the bore of said terminal; a rock-shaft and suitably-supported bearings therefor; a two-part sail each part having an upwardly-extending arm attached to said shaft, said sail being composed of a plurality of movable members and means operatively connected to each of said movable members adapted to move them simultaneously and present them edgewise to the wind when the sail has moved to the end of its upward course substantially as specified and for the purpose set forth.

3. In a wind-engine of the character specified, a swinging reciprocating sail comprising a plurality of individual blades; a shaft having a pair of arms operatively connected to said sail; suitable supporting-bearings for said shaft; a piston-rod and means to connect it to said shaft, and additional means operatively connected to each blade adapted to control the blades and thereby present a solid front to the wind until the sail has reached the end of its upward course and then permit the blades to open and thereby cause the sail to lower itself by gravity to the initial point of the next upward stroke substantially as set forth.

4. The herein-described wind-engine comprising a suitable support; a piston-rod oper-

actively carried by said support; a rock-shaft connected to said piston-rod whereby when the shaft is rocked the piston-rod will be reciprocated; suitable bearings for said shaft carried by said support; a sail provided with arms, the free ends of which are connected to and adapted to rock said shaft when the sail is moved upward and downward and automatic means carried by the sail adapted to offer resistance to the wind as the sail moves upward and reduce said resistance to the minimum point when the sail moves downward, all combined substantially as specified and for the purpose set forth.

5 5. The herein-described wind-engine, comprising a suitable frame or support; a piston or pump rod; a rocking shaft having an arm or crank; suitable bearings for said shaft carried by said support; a pair of downwardly-extending arms rigidly connected to said shaft; a suitable frame rigidly connected to said arms and having a plurality of movable blades; a cross-bar connecting all of said blades whereby the weight of said bar will simultaneously
5 move all of said blades into a vertical plane when the frame has reached its upward course and will permit the wind to close all of the sails when the frame has reached its downward course and thereby insure that the shaft and
5 piston connected thereto will be operated, all combined substantially as specified and for the purpose set forth.

6. In wind-motors, the combination with a suitable supporting-post, of a sail formed in
5 two main parts each part consisting of a plu-

ality of movable slats or blades, said main parts being connected together by suitable means adapted to permit them to occupy positions on opposite sides of said post when at their lowest point and means to operate said
40 slats or blades substantially as and for the purpose set forth.

7. In a wind-motor, a suitable supporting-post; a reciprocating sail formed in two parts and comprising a plurality of movable blades;
45 means to connect the two parts of said sail together whereby they may lie when at rest, diametrically opposite each other on each side of said post, and suitable means to open and close said blades at their highest and lowest
50 elevation respectively, substantially as and for the purpose set forth.

8. A wind-motor comprising a suitable support; a reciprocating two-part sail operatively mounted on said support, said sail in each part
55 comprising a plurality of blades having gudgeons or journals at each end, means to open and close said blades as specified; additional means to connect the two main parts of said sail together to permit them to move down-
60 ward upon opposite sides of the post without contacting therewith or with said connecting means all substantially as specified and for the purpose set forth.

In testimony whereof I affix my signature in
65 the presence of two witnesses.

CHARLES MCGREGOR.

Witnesses:

S. C. HILL,

A. G. MILLER.