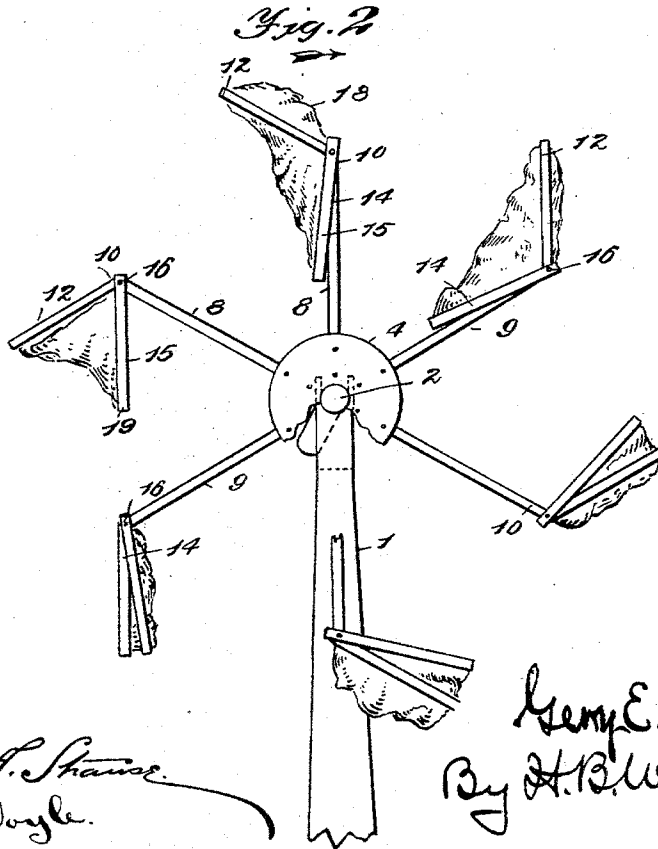
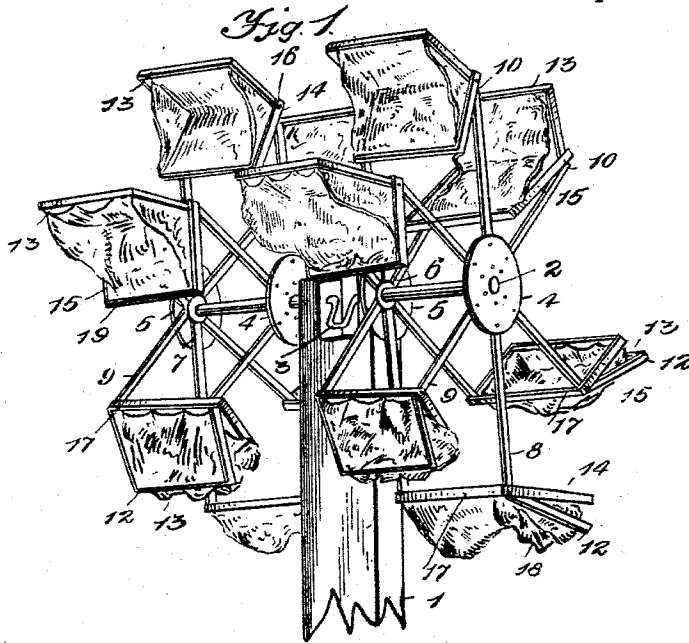


G. E. KNOWLTON.  
AUTOMATIC WINDMILL.

No. 589,530.

Patented Sept. 7, 1897.



Witnesses  
 Edmund A. Strauss  
 W. F. Doyle

Inventor  
 G. E. Knowlton  
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 Attorney

(No Model.)

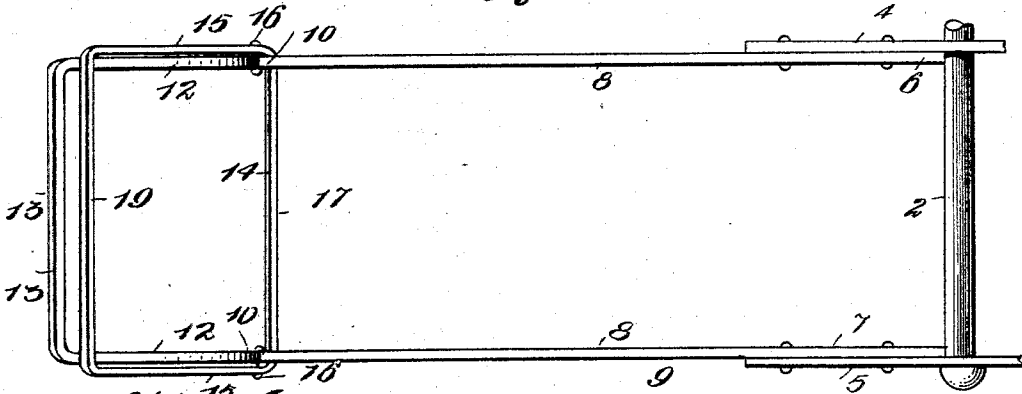
2 Sheets—Sheet 2

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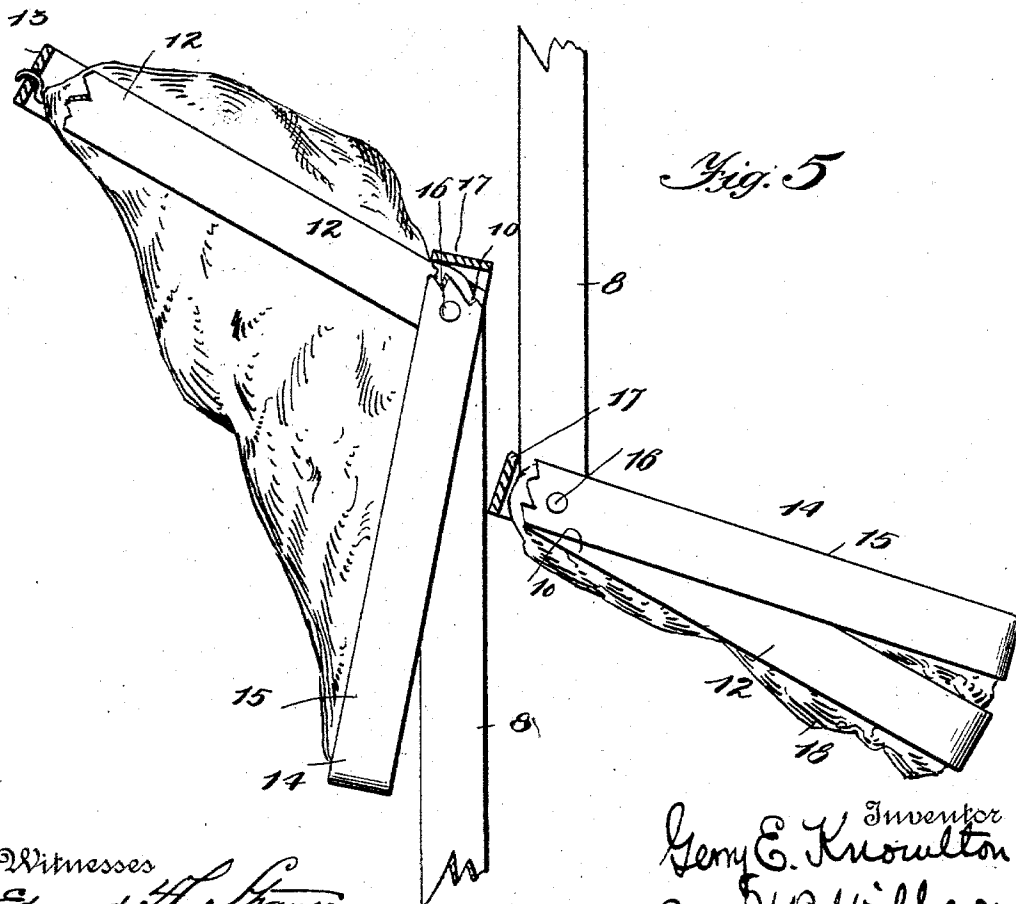
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*Fig. 3*



*Fig. 4*



*Fig. 5*

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# UNITED STATES PATENT OFFICE,

GERRY E. KNOWLTON, OF BOONE, IOWA.

## AUTOMATIC WINDMILL.

SPECIFICATION forming part of Letters Patent No. 589,530, dated September 7, 1897.

Application filed January 16, 1897. Serial No. 619,500. (No model.)

*To all whom it may concern:*

Be it known that I, GERRY E. KNOWLTON, a citizen of the United States, residing at Boone, in the county of Boone and State of Iowa, have  
5 invented certain new and useful Improvements in Automatic Windmills; and I do 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 ap-  
10 pertains to make and use the same.

My invention has relation to improvements in windmills; and the object is to provide a simple, cheap, and durable device of this class.

To this end the novelty consists in the construction, combination, and arrangement of  
15 the same, as will be hereinafter more fully described, and particularly pointed out in the claims.

In the accompanying drawings the same reference-numerals indicate the same parts  
20 of the invention.

Figure 1 is a perspective view of a windmill embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged plan view of one of the arms. Fig. 4  
25 is a detail showing the sail open, and Fig. 5 is a similar view showing the sail closed.

1 represents a suitable tower or standard, in which is journaled the horizontal shaft 2,  
30 formed with a central integral crank 3, from which the usual reciprocating motion may be communicated to a pump or other machine adapted to be operated by a wind-motor of  
35 this class. In some instances I may dispense with the crank 3 and substitute a band or cog wheel, from which a belt or shafting may communicate motion to any suitable machine.

4 and 5 represent disks secured to said shaft on each side of the standard 1, and to each  
40 pair of disks are secured the inner ends 6 7 of the radial parallel arms 8 8 of a series of rectangular frames 9 9.

The arms 8 8 of each frame 9 extend radially outward and parallel with each other  
45 to the elbow 10, where they are turned off in the same plane at an obtuse angle to form the bars 12 12, which are joined at their outer ends by an integral transverse brace 13.

14 represents a rectangular frame, the side  
50 pieces 15 15 of which are pivoted to the arms 8 8 at the elbows 10 10 by the bolts 16 16 in such a manner that the integral cross-brace

17 of the frame 14 limits the swing of the frame both in opening and closing.

Referring to Fig. 5, 18 represents the rec-  
55 tangular sail, which may be of any suitable fabric, secured along its upper edge to the transverse brace 13 on the outer arms of the radial frame 9 and along its parallel lower  
60 edge to the transverse brace 19 of the hinged frame 14, also along the inner edge of brace 17 of the frame 14. In this view the sail is shown closed to offer the least resistance to  
the wind, and it will be observed that the  
65 cross-brace 17 of the frame 14 rests against the outer ends of the arms 8 8 at a point just  
inside of the elbows 10, which limits the closing  
70 movement of the frame 14.

In Fig. 4, in which the sail is shown open,  
it will be noticed that the open movement of  
75 the frame 14 is limited by the cross-brace 17, resting against the inner ends of the bars 12 12, just outside of the elbows 10, and I consider this manner of limiting the movement  
80 of the frame 14 a very important feature, as it takes the strain off the canvas or other fabric of which the sail is composed and also prevents all noise incident to the outer end of  
75 the frame 14 striking against the arms 8 8 when the machine is in operation.

In practice I provide my mill with the usual  
85 vane, which serves to keep it "head to" the wind, the upper end of the standard in which the shaft 2 is journaled revolving about on a base for that purpose.

Although I have specifically described the  
85 construction and relative arrangement of the several elements of my invention, I do not desire to be confined to the same, as such changes or modifications may be made as clearly fall  
90 within the scope of my invention without departing from the spirit thereof.

Having thus fully described my invention,  
what I claim as new and useful, and desire to  
95 secure by Letters Patent of the United States, is—

1. A windmill comprising a horizontal shaft, parallel disks fixed on said shaft, a frame 9  
having its parallel arms 8 8 secured to said  
100 disks, the outer ends of said arms being connected by a transverse brace 13, in combination with the rectangular frame 14 hinged to  
said frame 9 by the bolts 16, 16, and the sail  
fabric 18 connected to said transverse brace

13 and to the free end of the frame 14, substantially as shown and described.

2. A windmill comprising a horizontal crank-shaft, the parallel disks fixed on said shaft, a series of radial rectangular frames 9 9, each frame being formed with parallel arms 8 8 terminating in inclined parallel bars 12 12, connected at their outer ends by a transverse brace 13, in combination with the hinged frame 14, the sides 15 15 of which are pivoted to said arms 8 8 by bolts 16 16, and the sail

fabric 18 connected along its upper edge to the brace 13, and along its lower edge to the free end of the frame 14, substantially as shown and described.

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

GERRY E. KNOWLTON.

Witnesses:

W. H. CROOKS,  
J. W. DURANT.