

(No Model.)

2 Sheets—Sheet 1.

L. GAYON.  
PROPELLER.

No. 480,945.

Patented Aug. 16, 1892.

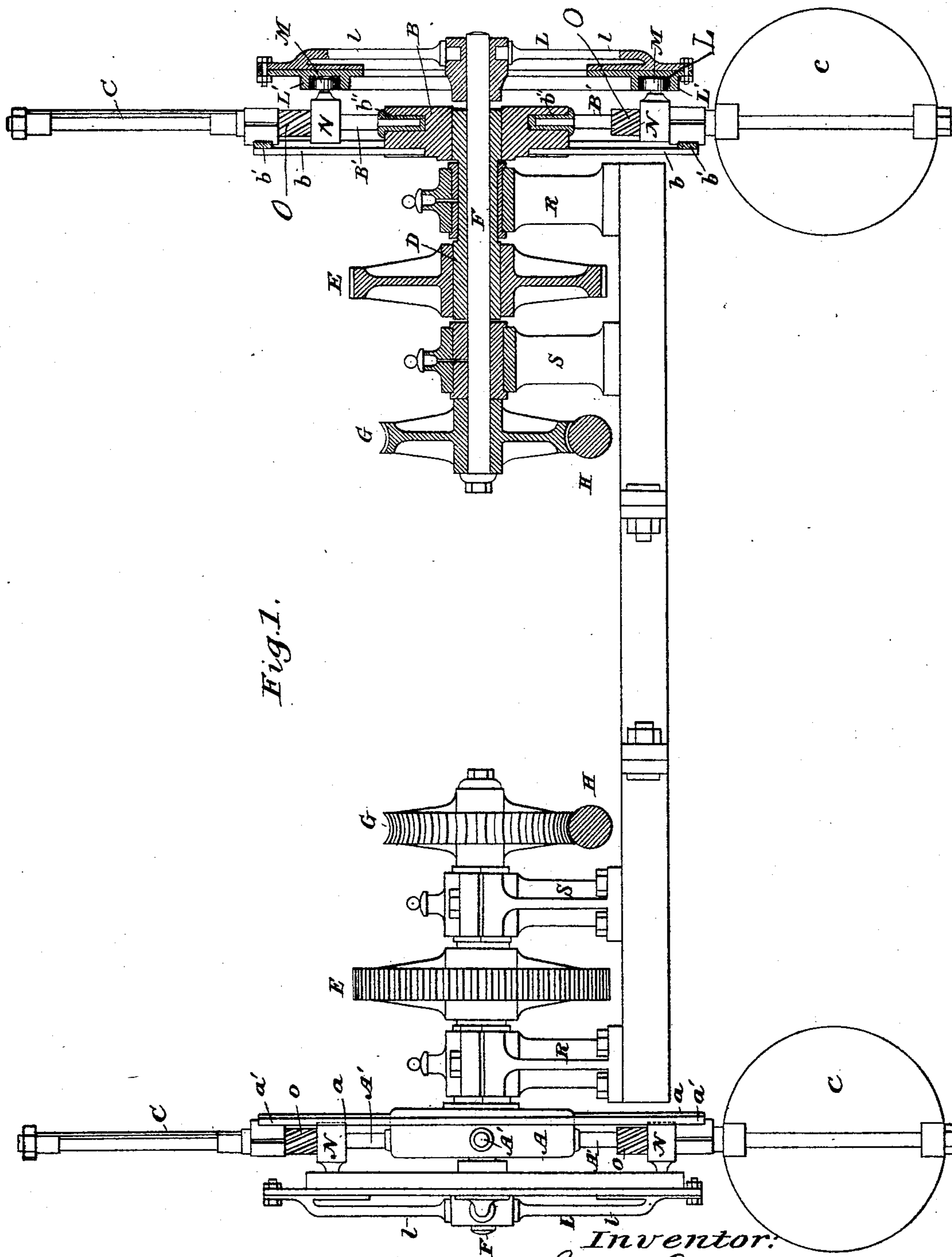


Fig. 1.

Witnesses:  
S. B. Bolton  
W. O. Walsh.

*Inventor:*  
Leon Gayon  
*By* Richard D. [Signature]  
*his Attorney*

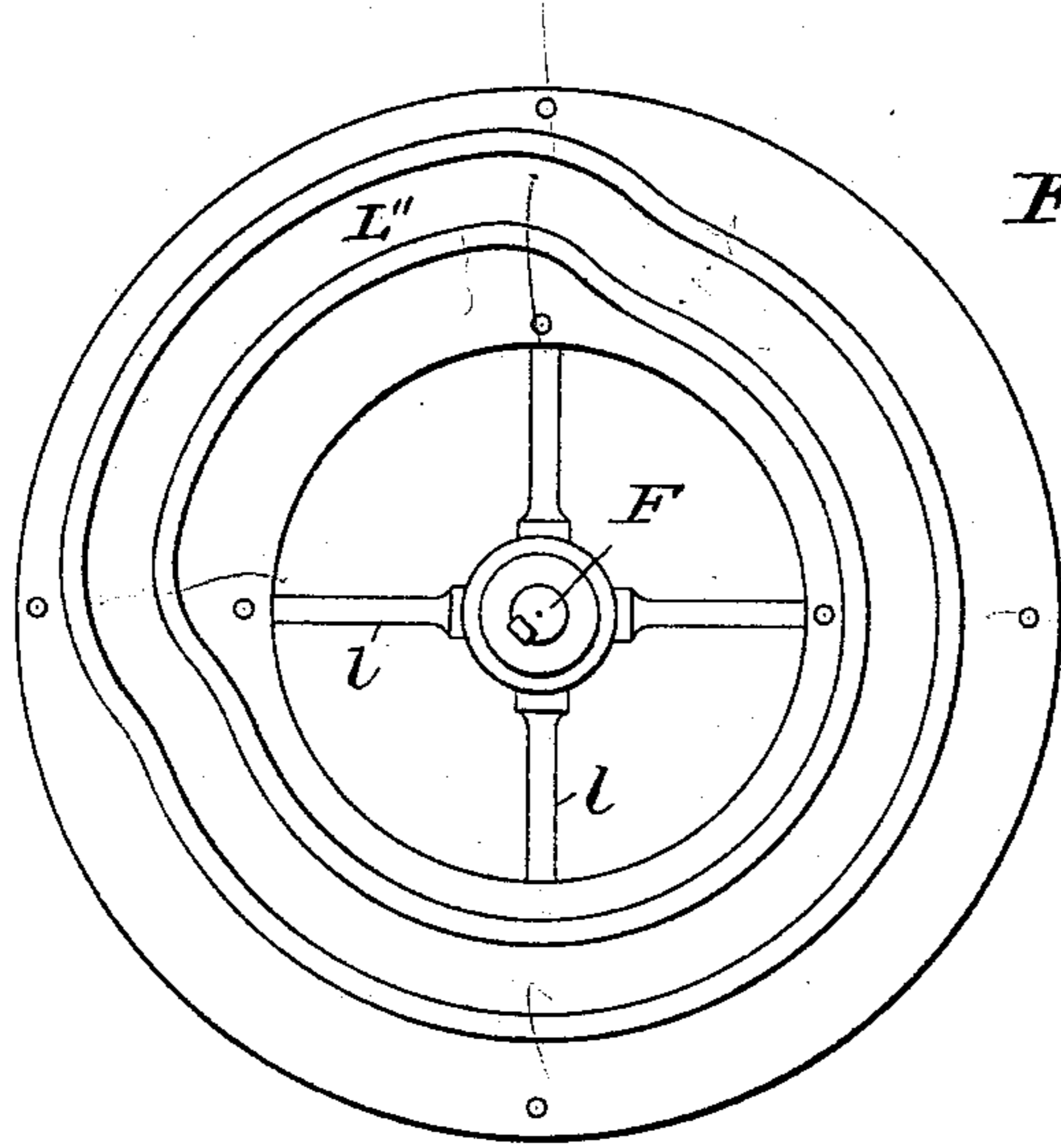
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2 Sheets—Sheet 2.

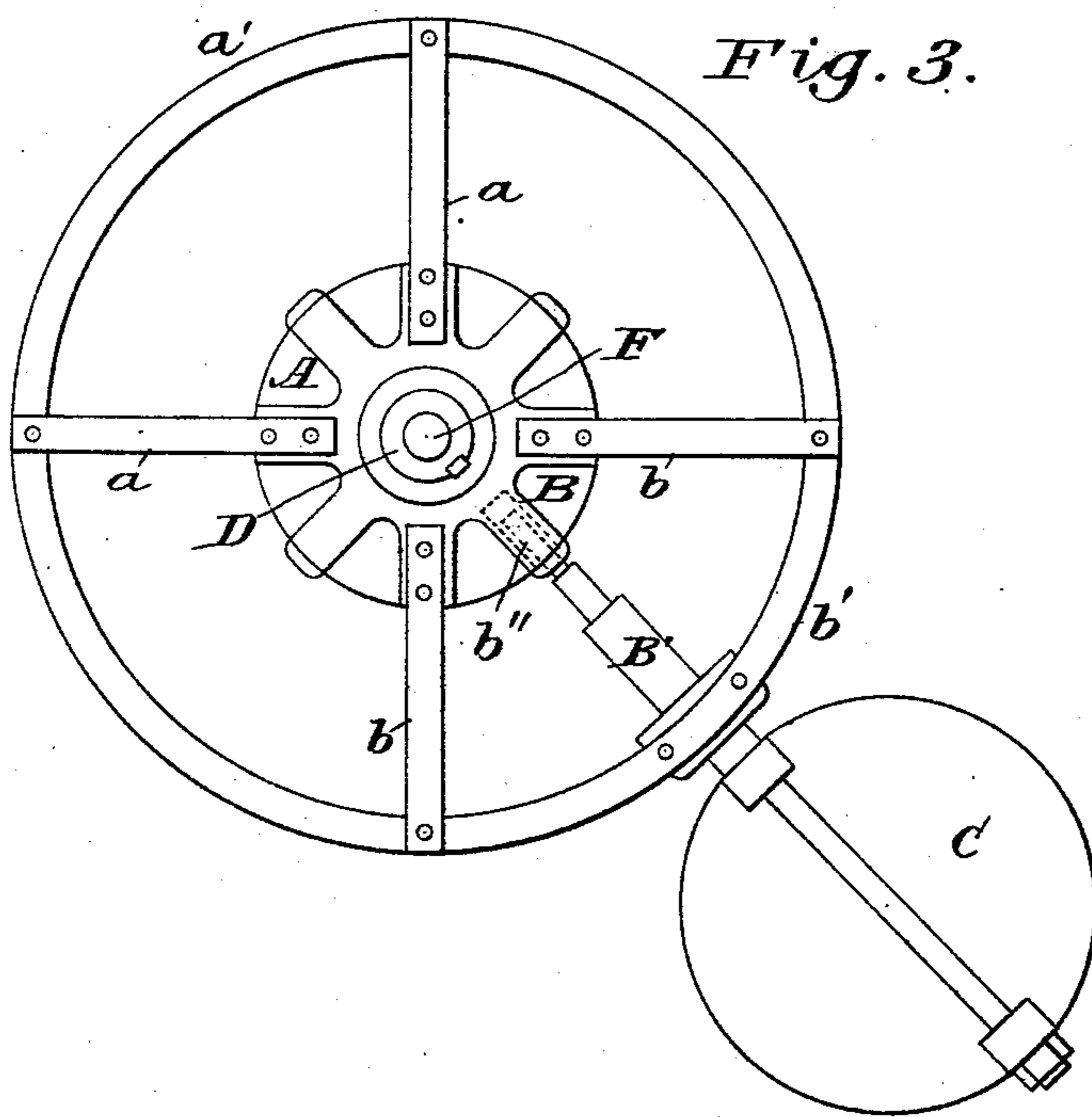
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*Fig. 2.*



*Fig. 3.*

Witnesses:

*E. B. Bolton*  
*M. A. Walsh*

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*Leon Gayon*

By *Richardson*

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# UNITED STATES PATENT OFFICE.

LEON GAYON, OF PARIS, FRANCE.

## PROPELLER.

SPECIFICATION forming part of Letters Patent No. 480,945, dated August 16, 1892.

Application filed August 14, 1891. Serial No. 402,614. (No model.)

*To all whom it may concern:*

Be it known that I, LEON GAYON, a citizen of the Republic of France, residing at Paris, in the said Republic, have invented certain  
5 new and useful Improvements in Propellers, of which the following is a full, clear, and exact description.

The subject of my invention is a new rotary propeller applicable to navigation in  
10 general, but more particularly to aerial navigation; and it consists in certain parts and combinations thereof hereinafter more particularly described and claimed.

To facilitate the understanding of the description, I will refer to the accompanying  
15 drawings.

Figure 1 is a view, half in elevation and half in longitudinal section, of my new propeller. Figs. 2 and 3 are views in front elevation of  
20 two of the parts of my new propeller.

The same letters of reference represent the same parts in the different figures.

My apparatus is composed of two independent wing-wheels A B, bearing any number of arms A' B', (four in the drawings,) terminated at their ends by a kind of blade C, having in the drawings the form of a disk and which can be turned in any direction to produce  
30 or not an effort on the fluid in which the object to be propelled moves. These wheels A B are mounted each on a hollow shaft D, which is given a rotary movement by the tooth-wheels E, which again are actuated by an electric motor or other means. The hollow  
35 shaft D is traversed by a solid shaft F, which can be worked by hand at one of its ends by means of a wheel G, actuated by an endless screw H or otherwise, and which bears at its other end a cam-plate L, hollowed or not, in  
40 the interior and in whose groove L'' a system of rollers M can glide, mounted on a stationary nut-screw N with a quick-thread, in which screws of the same thread O can turn, and destined to produce the movement  
45 which will be described. The wheels A and B being set up, as described, each with the same independent parts, and the cams L being supposed to be immovable under the action of the motor, the wheels E will turn in the  
50 same direction and with absolutely the same speed. In this movement the blades C will

be, during the greatest part of their course, in a slanting position. When in this rotating movement, each of the rollers M, mounted on the arms A' and B', passes in the groove L'' of  
55 the cam. It will go from the center of the cam L, drawing with it the nut N, which it carries, whereby is caused a partial rotary movement of that blade C, which is borne by the same shaft as the corresponding roller M. The cam  
60 L and the screw-thread O are arranged in such a manner that for the movement of the roller of which we have just spoken a movement of the blade C is produced which is equal to a fourth of a rotation—that is, the blade which  
65 was slanting will be flat. The gear-wheels E will continue their movement. Each of the blades C will be flat and in its turn will act in the manner of a wing or oar to produce an effective work. If now, instead of, as preceded-  
70 ingly proposed, the two motors turning at the same speed, we suppose, on the contrary, that one of the two turns with greater speed than the other, the motor with the fastest movement will draw the system to its side, making  
75 it effect a rotation. Moreover, if one of the two motors is at rest while the other works the entirety of the system will not be displaced, but will simply turn, remaining on the same spot. The same effect will be pro-  
80 duced with more rapidity if one of the motors turns in one direction while the other turns in the other.

All the varieties of movement can be obtained by means of the parts G H, mounted  
85 on the same shaft F of the cam. One can, in fact, by means of the endless screw H, which actuates the wheel G, turn the shaft F and one of the cams L at a certain speed, or the wing-wheel will remain resting if the cam  
90 turns at the same speed but in opposite direction to that of the wing-wheel corresponding to it, in which case a backward movement will take place, or else it turns at a less speed and always in an opposite direction to that  
95 of the corresponding screw-wheel, in which case there will only be a retardation on this side. The same result could be produced by having the cam turn in the same direction as the wing-wheel, but at a different speed. 100

To render the rotary movement of the wings C easier, the arms A' B' which bear them are

mounted by means of sockets  $b''$  in the hubs of the wing-wheels.

To obtain the greatest lightness possible, I have shown in the drawings a mounting obtained by a simple system of arms, the arms 5  $l$  bearing the head of the cam, the others  $a$   $b$  bearing a crown  $a'$   $b'$ , on which are fixed the arms  $A'$   $B'$  of the corresponding wing-wheel.

The whole system is supported by pedestals 10  $R$   $S$ , holding up the ones  $R$ , the hollow shaft, and the solid shaft, the others  $S$  the solid shaft only.

Having thus described the object of my invention, and the practical means of carrying 15 the same into effect, I claim—

1. In combination, the wheel carrying the radial shaft with the blades at the ends thereof, the cam arranged with its face adjacent to the said wheel and having a cam-groove in the said face, the nut  $N$ , in connection 20 with the said cam-groove, whereby it is moved toward and from the center of the wheel, and the threaded connection between the said nut

and the radial shafts, whereby the said shafts are given a rotary reciprocation and the blades 25 are feathered, substantially as described.

2. In combination, the wheel carrying the radial shafts and the blades at the ends thereof, the cam arranged with its face adjacent to the side of the wheel, the connection 30 between the radial shafts and the cam, and the means for rotating the wheel and cam independently of each other, said means consisting of the hollow sleeve  $D$ , carrying the wheel, the means for rotating said sleeve, the 35 shaft extending through the sleeve and carrying at its outer end the cam, and the means at the inner end of the shaft for rotating it and turning the cam about the axial line of the wheel, substantially as described. 40

In witness whereof I have hereunto set my hand in presence of two witnesses.

LEON GAYON.

Witnesses:

ROBT. M. HOOPER,  
JULES FAYOLLET.