

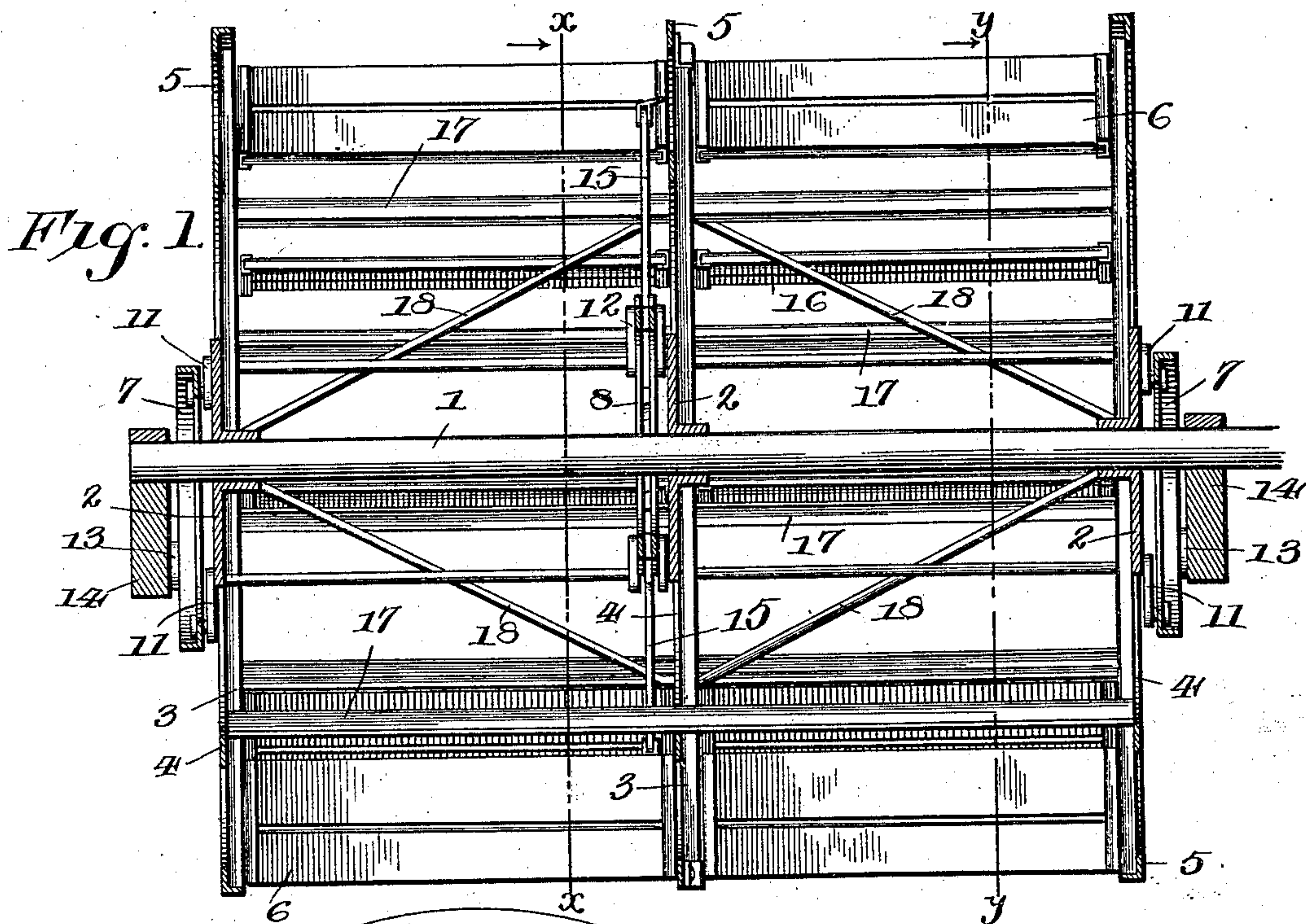
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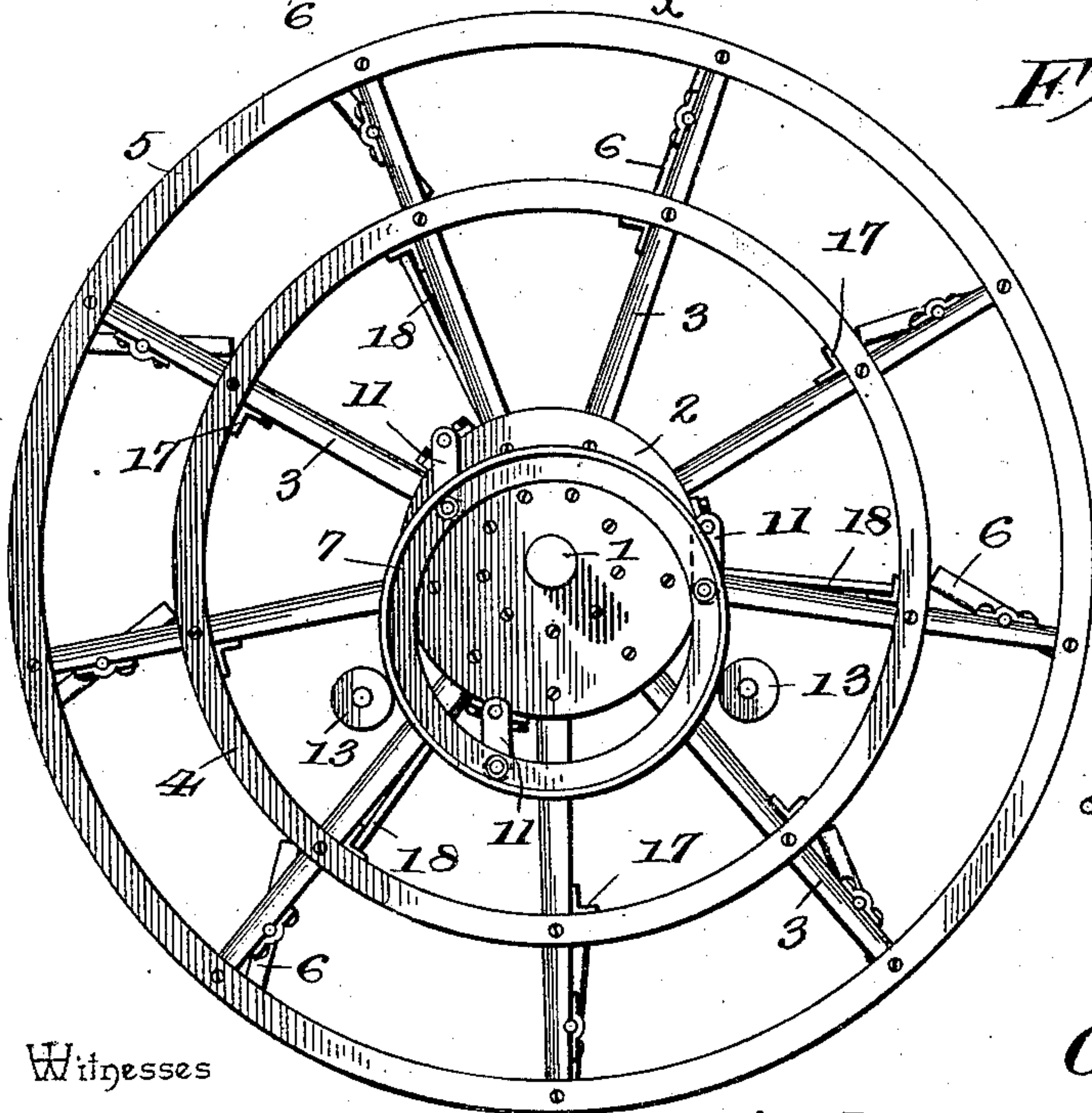
G. W. PELTON.  
PROPELLER WHEEL.

No. 553,177.

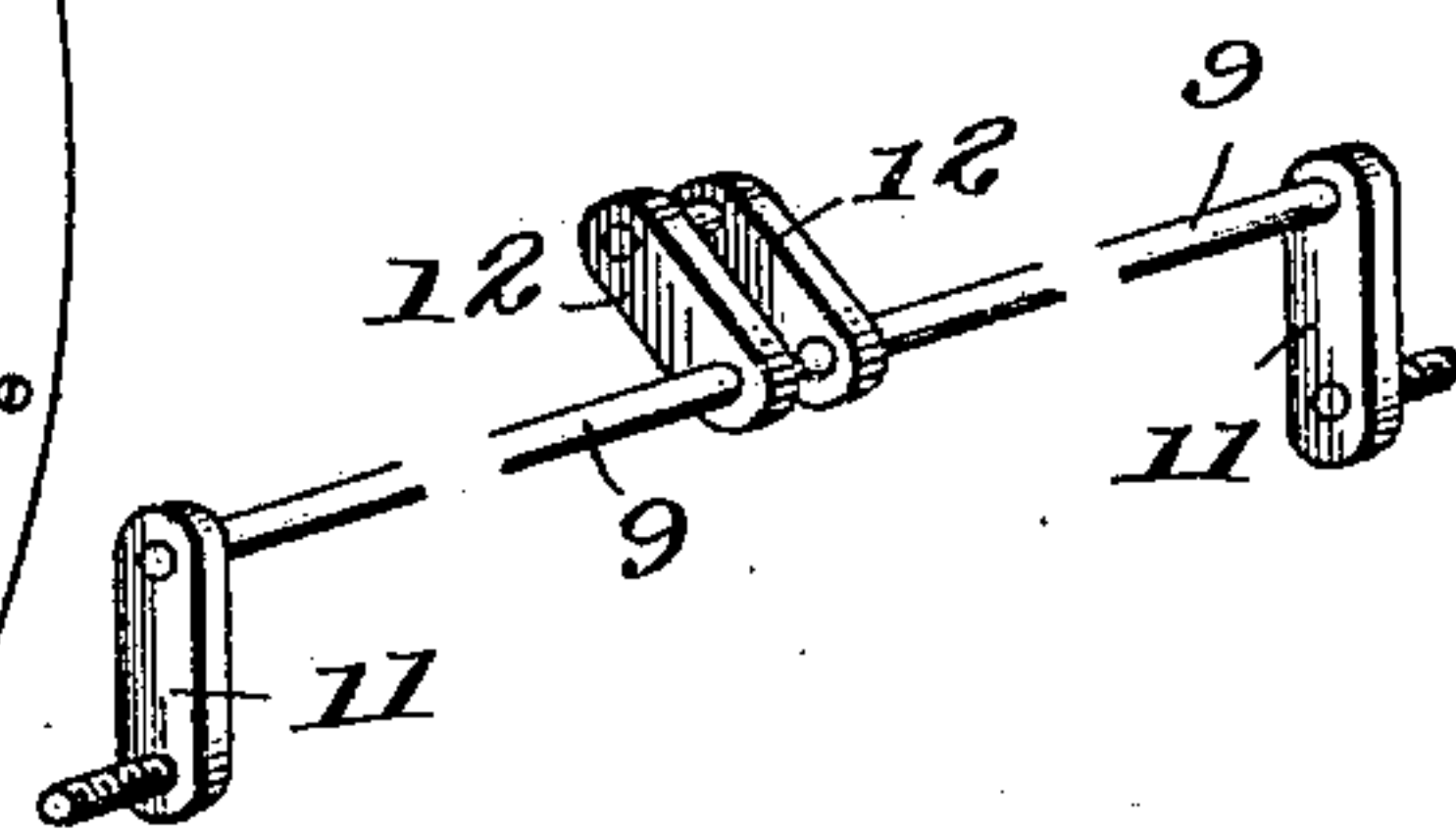
Patented Jan. 14, 1896.



*Fig. 2.*



*Fig. 6.*



Witnesses

Chas. A. Ford.  
V. B. Hillyard.

By his Attorneys,

George W. Pelton,  
C. A. Snow & Co.

Inventor



(No Model.)

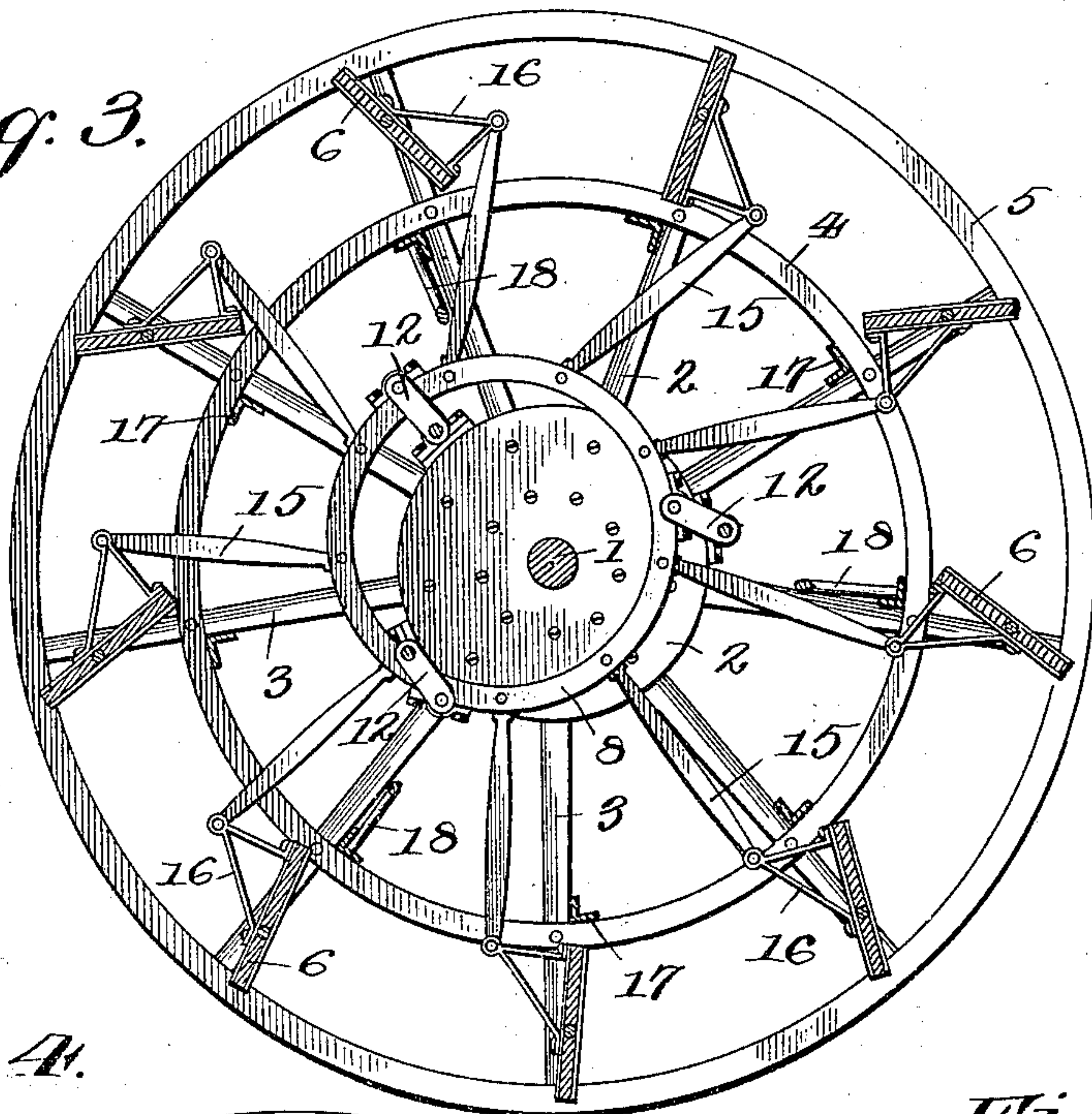
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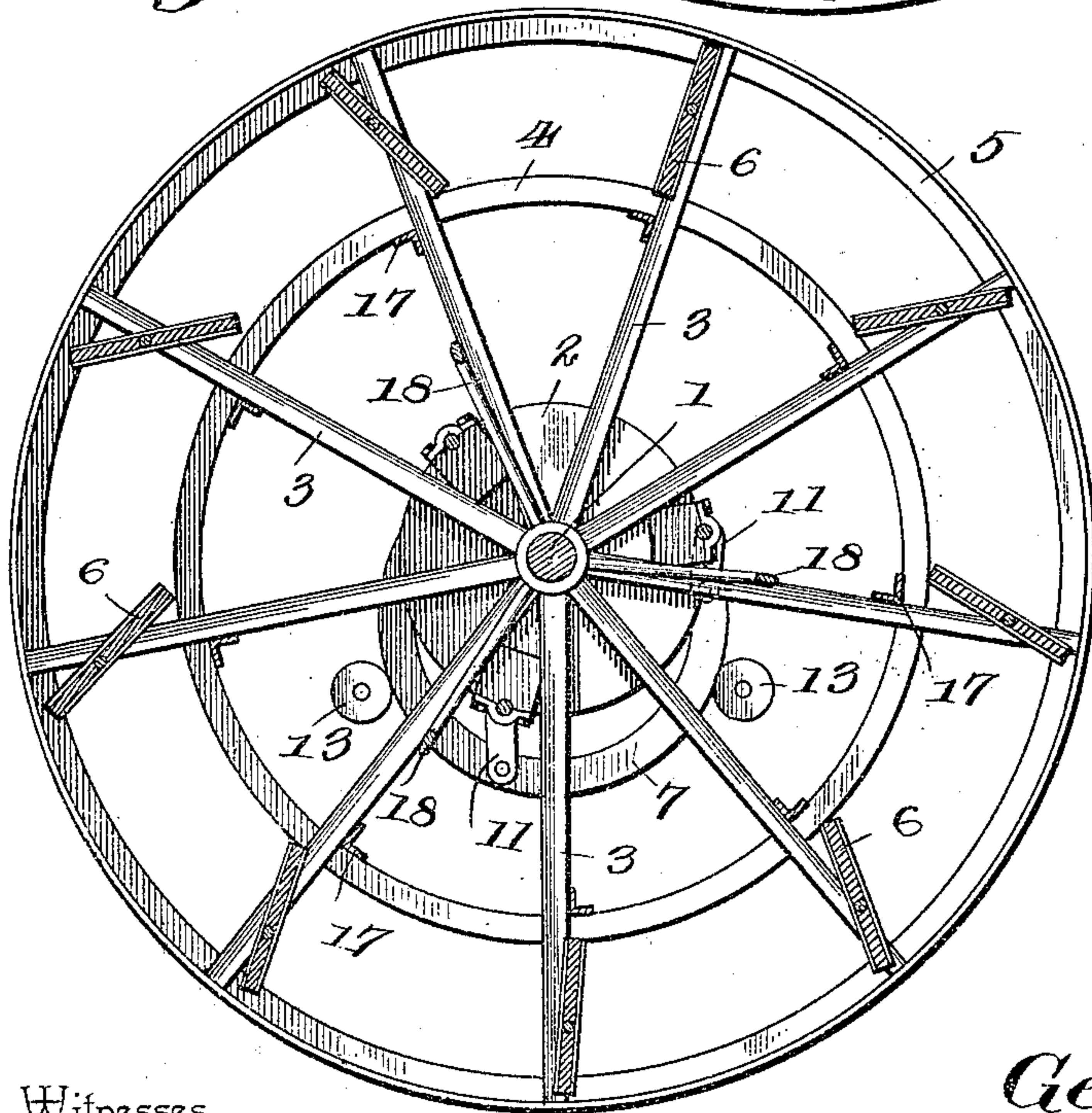
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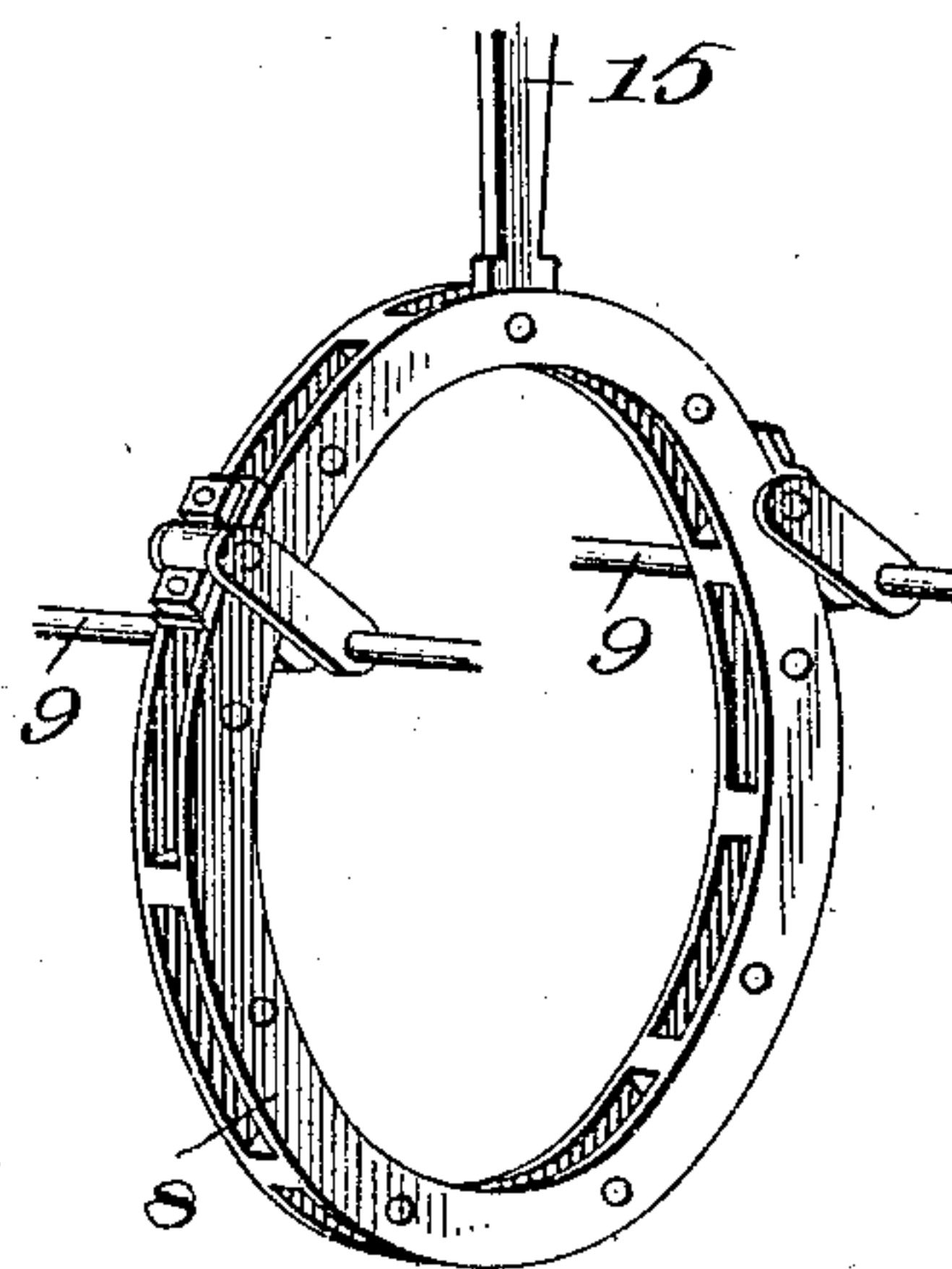
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



Witnesses

*Chas. A. Ford.*

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By *his* Attorneys,

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Inventor

*George W. Pelton,*



# UNITED STATES PATENT OFFICE.

GEORGE W. PELTON, OF MUSCATINE, IOWA.

## PROPELLER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 553,177, dated January 14, 1896.

Application filed October 28, 1895. Serial No. 567,179. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. PELTON, a citizen of the United States, residing at Muscatine, in the county of Muscatine and State of Iowa, have invented a new and useful Propeller-Wheel, of which the following is a specification.

This invention relates to that class of paddle or propeller wheels for water-craft in which the buckets or blades are feathering, so as to obviate lost motion and prevent unnecessarily loading the propeller when in active service, and has for its object to simplify and cheapen the construction, to reduce the parts to a minimum number, and to increase the usefulness, effectiveness, and durability of the propeller, and finally to improve the general construction and arrangement of the parts, whereby the device is rendered more desirable and can be operated with the expenditure of a minimum amount of force.

Other objects and advantages are contemplated and will become apparent as the nature of the invention is better understood; and to this end the improvement consists in certain details of construction, peculiar features, and the novel combination of parts, which hereinafter will be more fully set forth, illustrated, and finally claimed.

In the accompanying drawings is illustrated a propeller-wheel constructed in accordance with this invention, although various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention, and in said drawings—

Figure 1 is a vertical central section of a propeller-wheel constructed in accordance with this invention. Fig. 2 is an end view thereof. Fig. 3 is a cross-section on the line X X of Fig. 1, looking in the direction of the arrow. Fig. 4 is a view similar to Fig. 3, looking in the opposite direction. Fig. 5 is a detail view of the middle ring, showing the manner of the connecting the crank-shafts and pitmen thereto. Fig. 6 is a detail view of a crank-shaft.

The same numerals of reference denote corresponding and like parts in all the figures of the drawings, and in the latter 1 indicates the axle or shaft upon which are mounted the

component parts of the wheel; 2, the hubs; 3, the arms secured at their inner ends to the hubs in any substantial manner and radiating therefrom; 4 and 5, the inner and outer bands, respectively, for bracing and strengthening the outer portions of the arms; 6, the paddles or buckets mounted upon rods which are journaled in bearings secured to the arms near their outer ends; 7, the end rings; 8, the middle ring, and 9 the crank-shafts which are mounted at their ends and intermediate of their ends in bearings 10, located in the angles formed between adjacent arms 3, and secured either to the said arms or to the flanged portions of the hubs, as found most convenient.

The end cranks 11 at the extremities of the crank-shafts 9 come exterior to the end hubs and have connection with the end rings 7, by means of which the crank-shafts are caused to move synchronously. The middle cranks 12 are disposed at a different relative angle to the end cranks, and are positively connected with the middle ring 8, one member of each crank being disposed upon each side of the ring 8, so as to admit of the latter operating freely between the members when the propeller is in motion. The parts of each crank-shaft upon opposite sides of the middle crank 12 are in alignment, and the shafts 9 extend in parallel relation with one another and with the axle or shaft 1. The several rings 7 and 8 are eccentrically disposed with respect to the shaft 1, and the end rings 7 are guided in their movements so as to secure a feathering action of the blades by means of rollers 13 properly disposed and mounted upon the timbers 14 adjacent to said rings 7, and which carry the bearings in which the propeller is mounted. A corresponding movement to that of the end rings is transmitted to the middle ring 8 by reason of the connection of the cranks 12 therewith. Thus it is that in the operation of the paddle-wheel the rings 7 and 8 maintain their eccentric relation to the axial line of rotation of the propeller.

The middle ring 8 may be constructed in any desired manner, and, as shown, comprises parallel parts which are spaced apart by intermediate blocks and between which are fitted the inner ends of the pitmen 15, which have pivotal connection at their outer ends



with brackets 16 attached to the rear side of the paddles or buckets. By thus disposing and constructing the parts 8 and 15 all torsional strain is obviated and the friction is reduced, thereby admitting of the propeller being operated by less force.

The propeller is strengthened and braced longitudinally by means of bars 17 extending parallel with the axle 1 and secured to the several sets of arms, and by braces or stays 18 extending from the end hubs to about a middle point of the bars 17 and secured firmly to the latter. Thus it will be seen that the arms 3 are firmly braced against lateral stress in any direction, thereby resulting in the provision of a paddle-wheel capable of withstanding severe strain and involving a light and compact construction.

As previously intimated, the eccentric movement of the middle ring 8 is controlled by the end rings 7 and the intermediate connecting crank-shafts 9, and the parts are so proportioned and disposed with respect to the paddles or buckets to produce a feathering of the latter when the propeller is rotated in any direction.

All gearing of any character is rendered unnecessary by the provision of the parts herein set forth, and the propeller is capable of being more cheaply constructed and can be repaired and maintained in working condition at less expense than if the feathering of the blades was attained through the instrumentality of gearing.

The propeller can be made of any size, according to the nature of the craft to which it is to be applied, and the sets of arms may be increased or diminished without departing from the essence of the invention.

Having thus described the invention, what is claimed as new is—

1. In a feathering blade propeller, the combination of a series of shafts extending between the arms of the propeller and provided with end and middle cranks, eccentrically-disposed rings connecting the end cranks in series, an intermediate ring eccentrically related and operatively connected with the blades or buckets and with the intermediate cranks, and controlled in its movements thereby, and rollers disposed to control the movements of the end eccentric rings, substantially in the manner set forth for the purpose described.

2. In a propeller having feathering blades,

the combination of shafts extending between the arms of the propeller and journaled at their ends and intermediate of their ends, and having end and middle cranks disposed at different relative angles, end rings connecting the end cranks in series, rollers for maintaining the end rings in eccentric relation to the axis of the propeller, and a middle ring eccentrically disposed and controlled in its movements by having connection with the aforesaid middle cranks and operatively connected with the feathering blades, substantially in the manner and for the purpose set forth.

3. In a propeller having feathering blades, the combination of shafts journaled at their ends and extending between the arms of the propeller, and having end and middle cranks, eccentrically-disposed rings connecting the end cranks in series, the middle cranks being composed of parallel members, and a middle ring eccentrically disposed and located between the members of the middle cranks and having connection therewith and operatively connected with the blades to produce a feathering action thereof, substantially as set forth for the purpose described.

4. A feathering propeller constructed substantially as herein set forth, the same comprising a shaft having end hubs and a middle hub, arms radiating from the hubs and secured to the latter at their inner ends, inner and outer bands secured to the arms, bars and braces connecting the arms to stay and strengthen the propeller longitudinally, shafts extending between the arms and journaled at their ends and intermediate of their ends and having end and middle cranks disposed at different relative angles, the middle cranks comprising parallel members, end rings eccentrically disposed and connecting the end cranks in series, and controlled in their movements by properly disposed rollers, and a middle ring eccentrically related and placed between the parallel members of the middle cranks and connected with the latter and with the feathering blades, substantially in the manner set forth for the purpose specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

GEORGE W. PELTON.

Witnesses:

JAMES FITZGERALD,  
G. J. HORAN.