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Patented Aug. 2, 1898.

C. E. OLSEN.
AUTOMATIC FEATHERING BLADE PROPELLER.

(Application filed Mar. 20, 1897.)

(Model.)

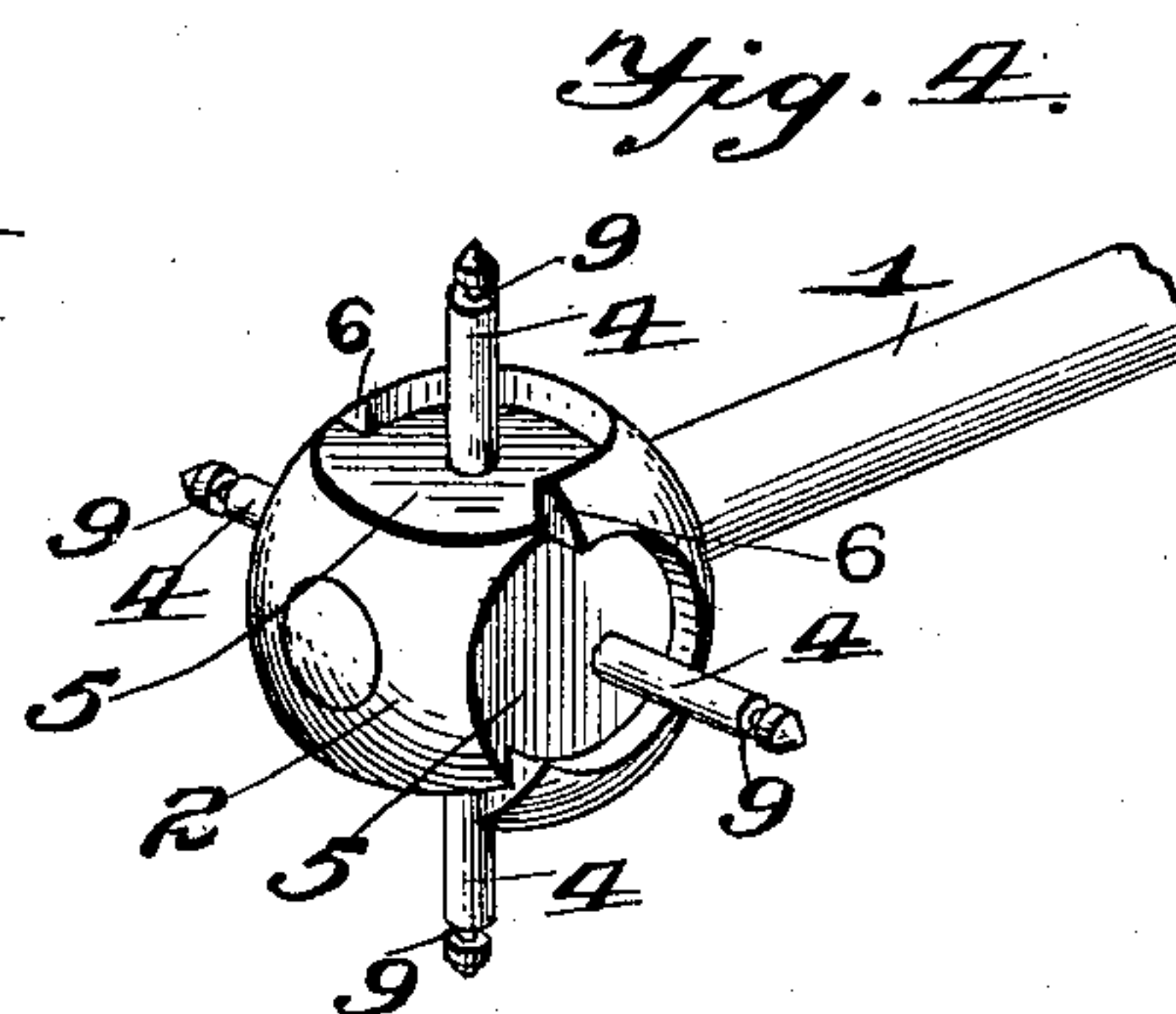
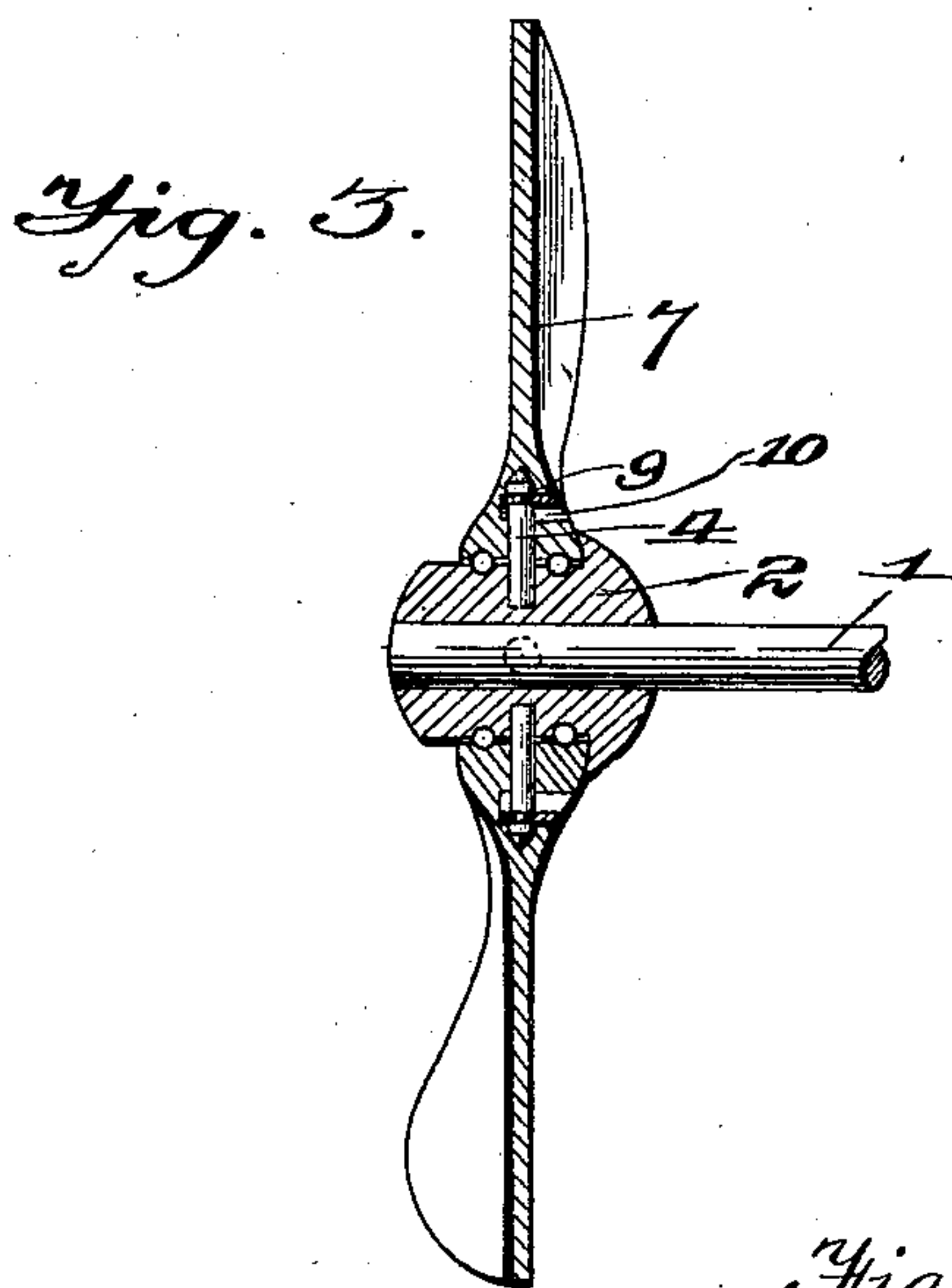
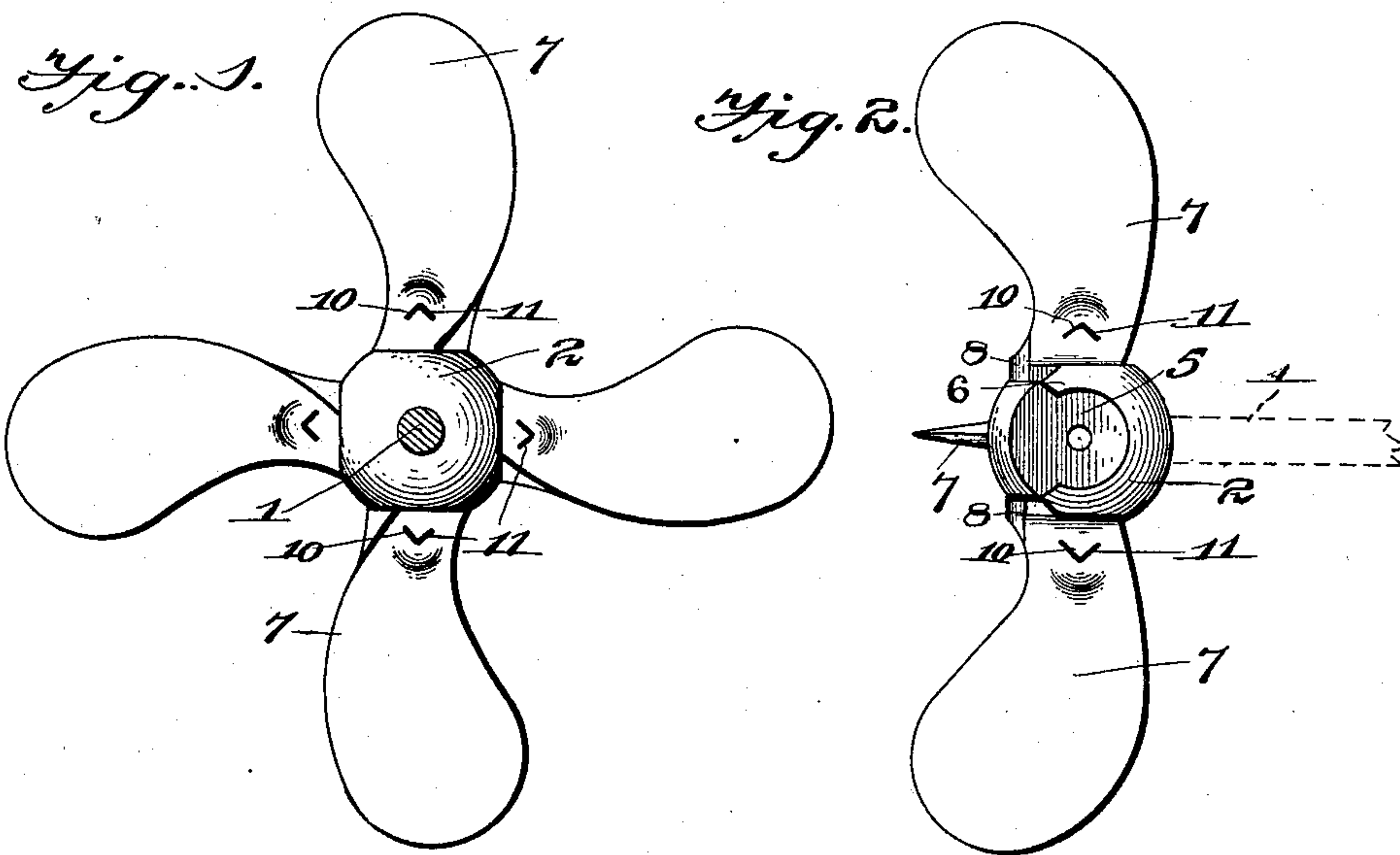


Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES E. OLSEN, OF BOWERY BEACH, MAINE.

AUTOMATIC FEATHERING-BLADE PROPELLER.

SPECIFICATION forming part of Letters Patent No. 608,265, dated August 2, 1898.

Application filed March 20, 1897. Serial No. 628,448. (Model.)

To all whom it may concern:

Be it known that I, CHARLES E. OLSEN, a citizen of the United States, residing at Bowery Beach, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Propellers; 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.

The object of this invention is to provide an improved propeller for vessels in which the blades will have an independent movement with respect to the head that will prevent the said blades "dragging" when the rotation of the propeller-shaft has ceased. This construction is especially desirable in ships or vessels that carry an auxiliary engine and depend for their main driving power upon the sails, and by the use of this propeller the blades will offer the least obstruction to the progress of the vessel when the engine is stopped. This is accomplished by connecting the blades to the hub in such manner that when the propeller is revolved or rotated it will act in the usual manner to force the vessel forward and when the propeller-shaft is stopped the said blades will automatically assume a position parallel with the direction of the boat, so as to cut the water and not drag.

Having the above objects in view, the invention consists in connecting the blades of the propeller pivotally to the hub and providing stops for limiting the movement or throw of said blades with respect to the hub.

The following specification will give a detailed description of the several parts which constitute my invention, reference being had to the drawings, and to numerals thereon, which designate the different features of construction that form a basis of the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is an elevation showing a propeller constructed in accordance with my invention. Fig. 2 is a side view of the propeller with the near blade removed. Fig. 3 is a sectional view through the hub and propellers. Fig. 4 is a detail view of the hub with the blades removed, and Fig. 5 is a detail view of the means for connecting the blades to the pivot-pins.

1 designates the propeller-shaft, to the end

of which is rigidly secured a head 2, having sides which correspond in number with the number of blades it is desired to use, the drawings showing a four-bladed propeller. The sides of the head or hub 2 are each provided centrally with the projecting pin 4, forming a pivot or bearing for the blade, and the said head is provided with a circular recess or socket 5, surrounding the pin, to receive the corresponding end of the blade. The wall of this circular recess or socket is cut away at one side, as shown, forming shoulders 6 for the purpose hereinafter set forth.

7 designates the blades of the propeller, which are of peculiar construction to adapt them for the particular objects which I have in view. The inner end of each propeller-blade is rounded or shaped to conform to the configuration of the socket in the hub and is provided centrally with an axial opening to receive the pivot or bearing pins on said hub. The blades are also provided at their inner ends with projections or lugs 8, that pass into the recesses or extensions of the sockets and contact with the shoulders formed thereby. These lugs, in connection with the recesses or extensions of the sockets, limit the throw of the blades in both directions and are consequently positioned with respect to the hub so that when said lugs or projections are in engagement with either one of the shoulders 6 the blades will be deflected to properly act upon the water to push the vessel forward. It may also be stated that as the blades are free to swing or rotate upon the pivots the axis thereof does not pass through the center of said blade, but the rear side is extended to present a greater amount of surface to be contacted by the water, and thereby acted upon to automatically throw the blades in proper relative position or deflected with respect to the shaft. It will be noted that the shoulders 6 are of a distance apart to permit the blade to swing or be thrown at an angle on opposite sides of the longitudinal line with the shaft. This provides a construction by which the propeller is operated to push the boat forward irrespective of the direction of rotation of the propeller-shaft, and the said blades will be free to rotate or move on their pivots and also automatically assume the position parallel with the shaft to cut the water.

From the foregoing description it will be seen that the principal object of the invention is to so connect the blades to the hub that when the shaft is stopped the movement of the boat through the water will bring the blades to a position to cut the water and not drag, and when the shaft is started the greater surface, which is to one side of the axis of the blade, will be acted upon to turn the blade in the proper direction for action.

It is obvious that the blades can be held upon the pivot-pins in any particular manner which will allow a free rotation; but the construction herein shown and described is the preferred form, as it permits the blades to be readily removed for repairs or for the purpose of renewing them. For this purpose the outer end of each pivot-pin is provided with an annular groove or recess 9, which is engaged by a bearing carried by the blade and consisting of the two parts 10 and 11. The blades are provided with transverse openings which receive the sections 10 and 11 of the bearing. It will also be understood that the bearing-surfaces of the blades and hub could be and preferably are provided with grooves to receive the ordinary antifriction ball-bearings, that would allow free movement of the blades, and thereby prevent them from offering any obstruction or impediment to the progress of the boat. The inner ends of the blades are preferably seated within the hub and a tight joint provided at this point in order to exclude any foreign matter from finding its way into the socket, and thereby preventing the proper contact of the lugs on the blades with the shoulders.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a propeller, the combination with a hub having pivot or bearing pins projecting therefrom, blades having axial openings by which said blades are placed in pivotal engagement with the hub, and stops for said hubs adapted to limit the pivotal movement of said blades.

2. In a propeller for the purpose set forth, the combination with a hub having pivot or bearing pins projecting therefrom, blades having axial openings by which said blades are placed in free pivotal engagement with the

hub, stops formed on the hub, and lugs projecting from the blades to engage said stops, substantially as shown and for the purpose set forth.

3. In a propeller, the combination with a head having sockets in the sides thereof and extensions on the socket forming shoulders, of blades seated within the sockets and provided with lugs that engage the shoulders formed by the extensions of the socket, and means for holding the blades in free pivotal engagement with the hub, substantially as shown and for the purpose set forth.

4. In a propeller of the character described, the combination with the hub having sockets therein and pivot-pins projecting from the center of the sockets, blades freely pivoted upon the pins, means for holding the blades in engagement with the pins, and stops for limiting the throw of the blades, substantially as shown and for the purpose set forth.

5. In a propeller of the character described, the combination with a hub having sockets and pivot or bearing pins projecting centrally therefrom, of the blades seated within the sockets upon the pivot-pins, said blades having a greater contact-surface on one side of the axis, means for connecting the blades to the pivot-pins, lugs projecting from the inner ends of the blades and engaging shoulders or stops formed on the hub, substantially as shown and for the purpose set forth.

6. In a propeller of the character described, the combination with the hub having sockets with pivot or bearing pins projecting centrally therefrom, blades seated on the bearing-pins and having lugs or projections adapted to engage shoulders or stops on the hub, antifriction-bearings between the parts, the blades having a greater surface to one side of their axis, and transverse openings communicating with the pivot-pins, removable bearings passed into said openings to engage the pivot-pins, the parts being constructed and organized substantially as shown and described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES E. OLSEN.

Witnesses:

STEPHEN C. PERRY,
GEORGE T. SPEAR.