

M. D. THOMPSON.

PROPELLER.

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993,126

Patented May 23, 1911.

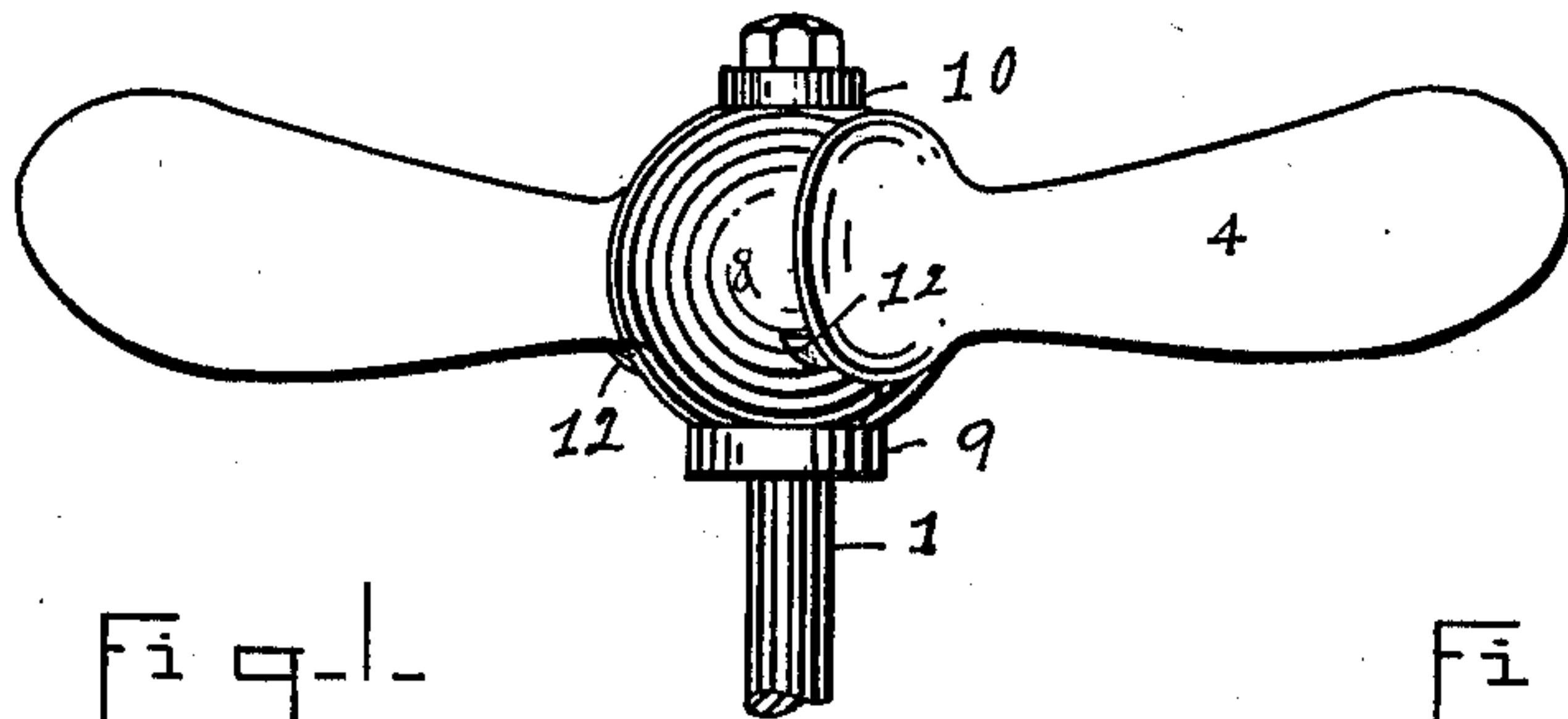


Fig. 1-

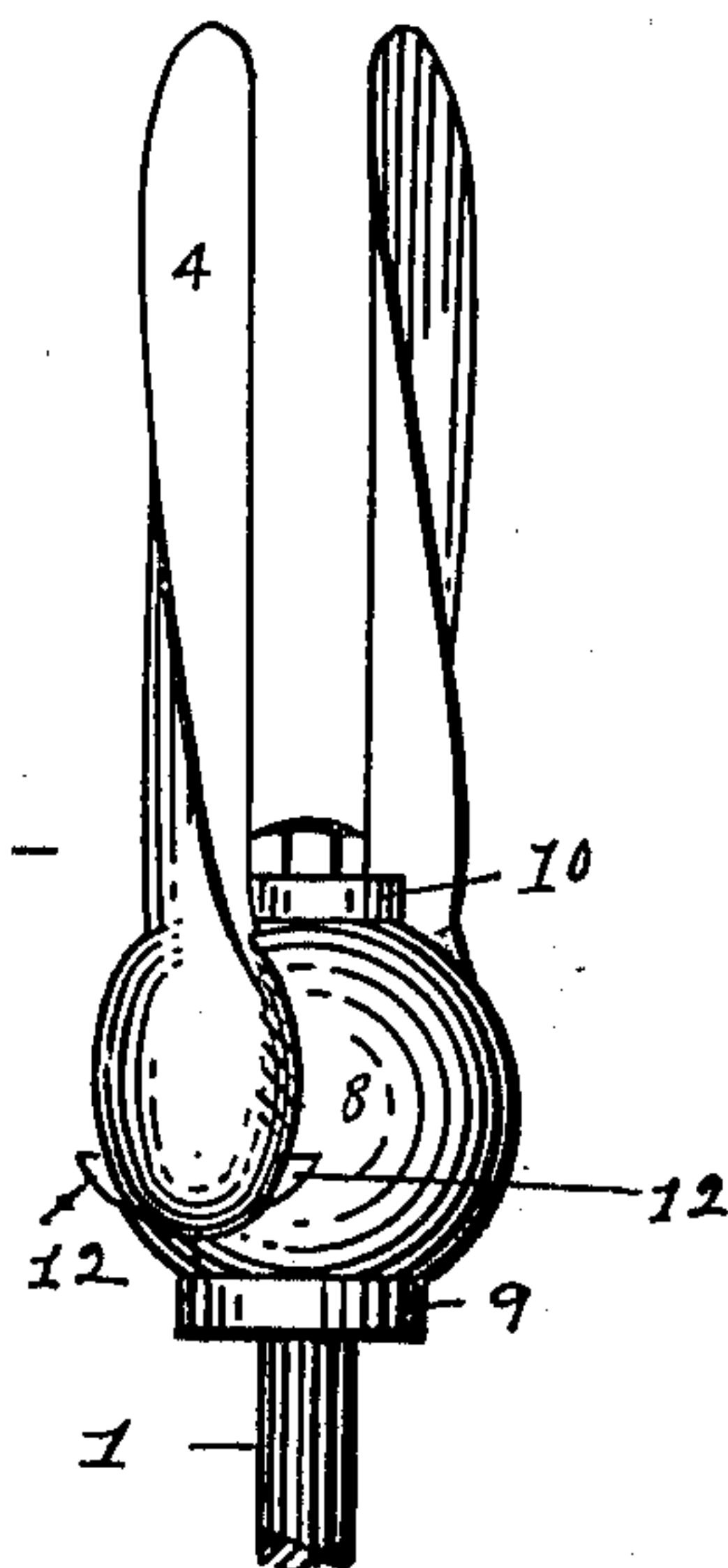


Fig. 2-

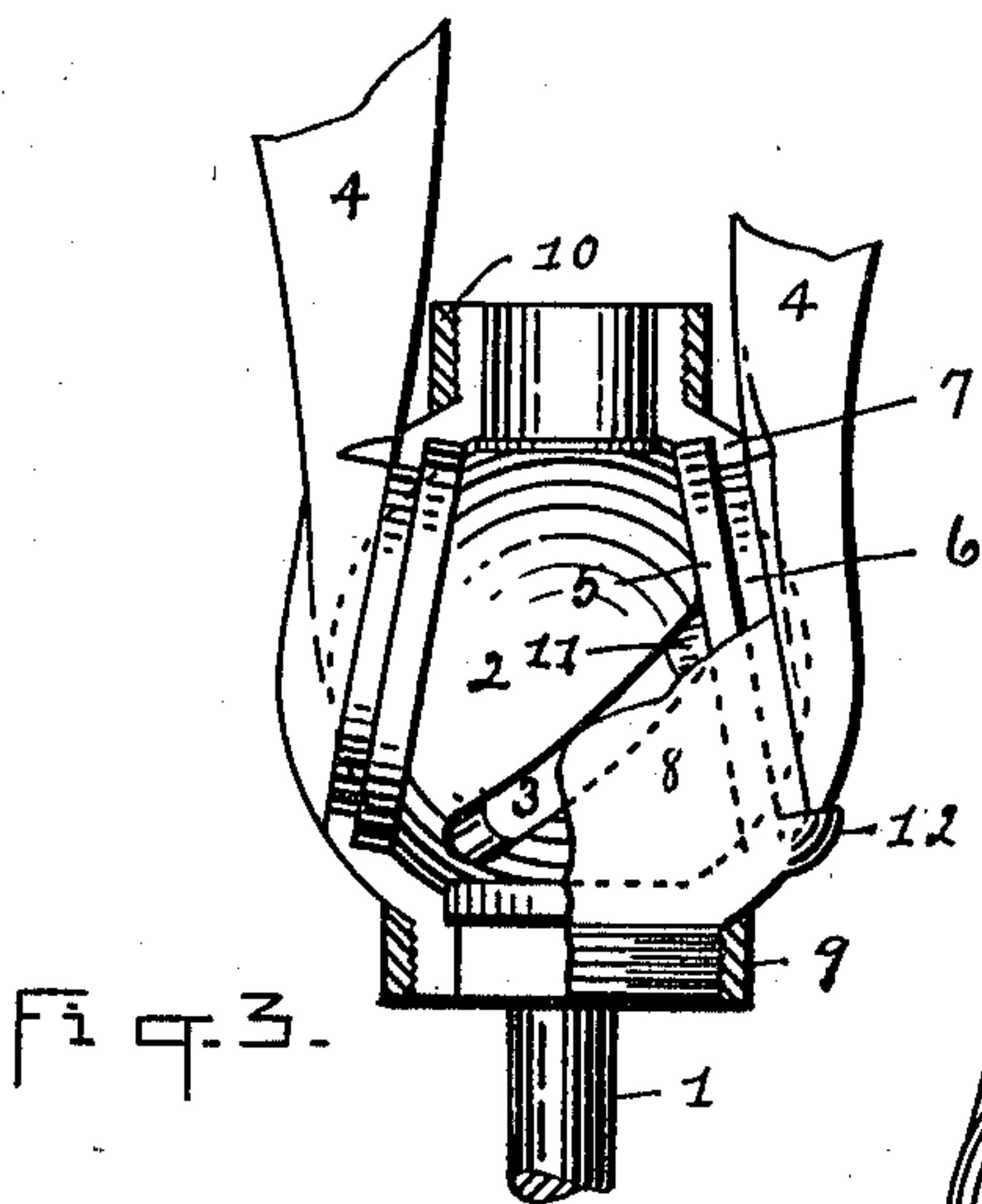


Fig. 3-

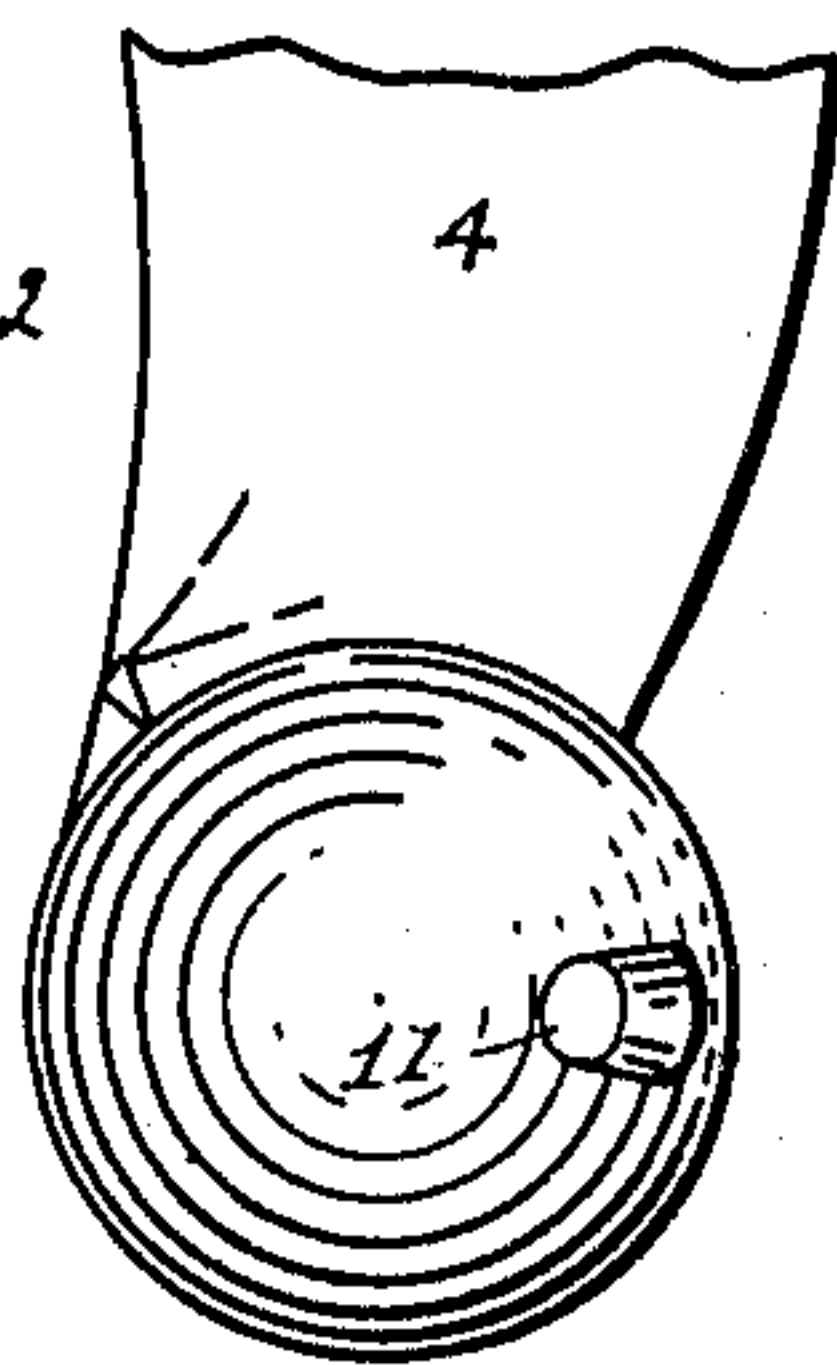


Fig. 5-

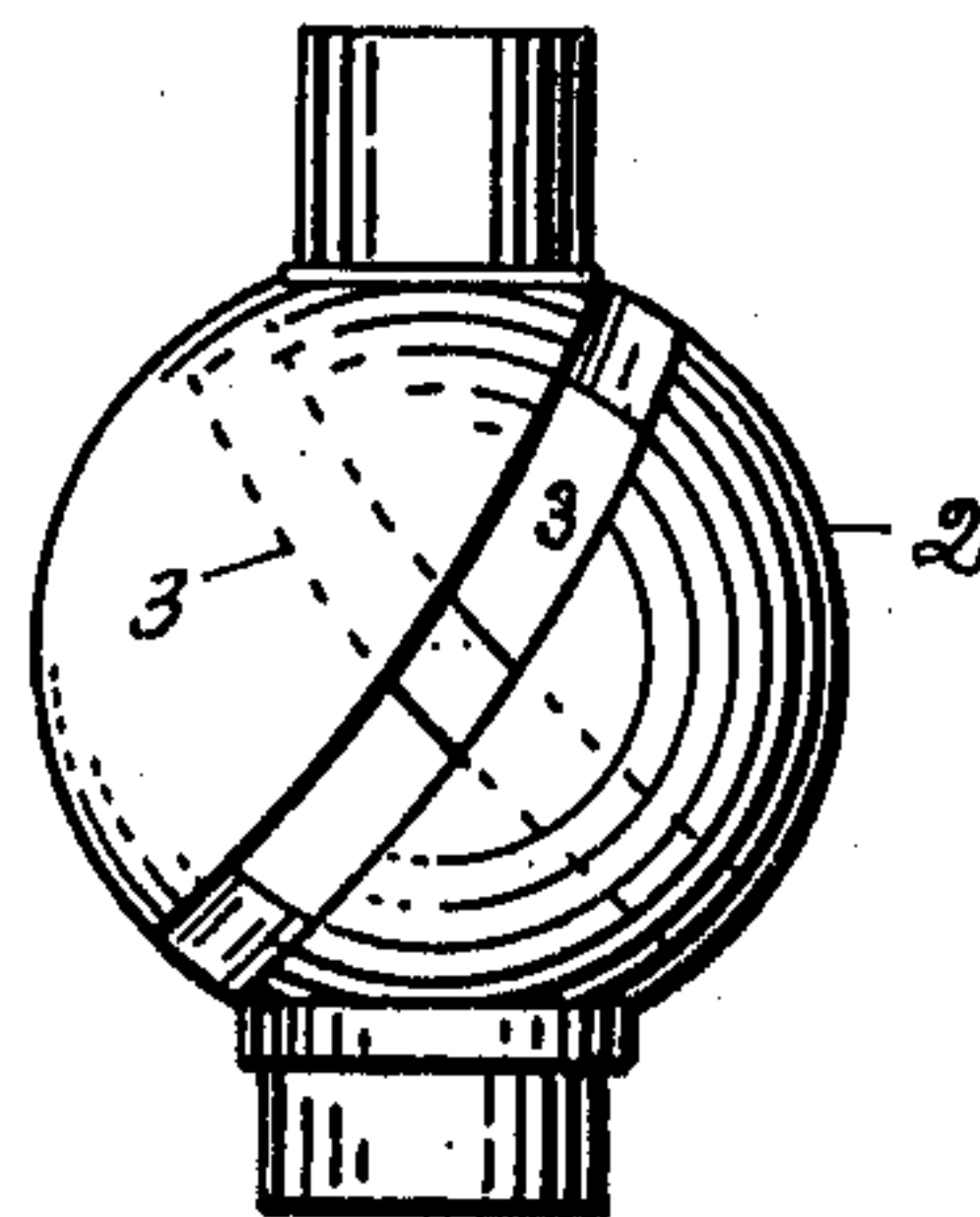


Fig. 4-

WITNESSES-

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# UNITED STATES PATENT OFFICE.

MILTON D. THOMPSON, OF SOUTH PORTLAND, MAINE, ASSIGNOR TO THE THOMPSON PROPELLER COMPANY, OF PORTLAND, MAINE, A CORPORATION OF MAINE.

## PROPELLER.

993,126.

Specification of Letters Patent.

Patented May 23, 1911.

Application filed June 22, 1910. Serial No. 568,400.

*To all whom it may concern:*

Be it known that I, MILTON D. THOMPSON, a citizen of the United States, residing at South Portland, in the county of Cumberland and State of Maine, have invented new and useful Improvements in Propellers, of which the following is a specification.

This invention relates to improvements in propellers and more particularly propellers capable of being made to assume both operative and inoperative positions said operative positions being adapted to propel a vessel both forward and backward.

The object of the present invention is to make certain improvements in the invention set out and claimed in my previous Patent No. 938,291 dated Oct. 26, 1909.

In the drawings herewith accompanying and making a part of this application, Figure 1 is a perspective view of my improved propeller showing the blades in operative position; Fig. 2 is a perspective view of my propeller showing the blades in inoperative position; Fig. 3 is an elevation partly in section of my improved propeller; Fig. 4 is a detailed view of the ball like terminal of the propeller shaft and Fig. 5 is a plan view of the inside of one of the propeller blades, a portion of the blade being broken off.

The same reference characters indicate like parts in the several views.

I have illustrated my invention as applied to a two blade propeller but it will be evident that the number of blades may be varied and still be within the spirit and scope of my invention and it is not intended to limit the scope of the invention to two blades.

In said drawings 1 represents a propeller shaft on the end of which is a spherical shaped terminal 2 similar to that shown in my said former patent but, instead of the V-shaped grooves of my former patent, I provide continuous spiral grooves 3, there being as many of these as there are to be blades in the propeller. The propeller blades 4 have on their inner ends in the edges thereof circular grooves 6 adapted to receive the edges 7 of the clamping members 8 surrounding the terminal 2 said clamping members being adapted to be held in place by screw threaded rings 9 and 10, the blades and clamps thereby having a circular tongue and groove connection. On the inside of the propeller blades are dogs 11 adapted in all positions of the blades to project into and

travel in said spiral grooves. On the outside of the clamp members and formed integral therewith are projecting ears 12, one on either side thereof, which serve as stops to limit the rotation of the blades to positions at an angle to the shaft, as seen in Fig. 1, the blade engaging said stop on one side or the other according as the shaft is rotated to give a forward or backward movement to the vessel. There will be as many clamp members as there are propeller blades, the line of separation between adjacent clamp members lying in a plane passing through the center of said grooved end of the blade and longitudinally through the center of the shaft. The body of the clamp members between the threaded ends may taper toward the end of the shaft, as seen in Fig. 3, and thus the grooved ends of the blades rotate in planes inclined to the shaft, whereby the requisite pitch of the blades is obtained by a less extended rotation of the blades in their bearing than would be required if they rotated in planes parallel with the shaft. The spiral grooves are so formed and positioned that when the dogs on the blades are at one end thereof the blades are in position to propel the vessel forward and reversal of the shaft causes the dogs to travel to the opposite end of the grooves reversing the blades and bringing them into position to cause the vessel to move backward. When the shaft is not being rotated and the vessel is in motion, the resistance of the water causes the blades to assume a position shown in Fig. 2, being the position of least resistance in moving through the water. The dog 11 is positioned at one side of the propeller blade as shown in Fig. 5.

One advantage of my improved propeller is increased freedom of movement of the propeller blades, since the entire movement of the blade from one extreme to the other causes the dog to travel in a continuous direction in making the change from either operative position to the other. Another advantage is that the inclination of the plane of rotation of the blades to the shaft lessens the extent of rotation required to obtain the necessary pitch of the blades.

Having thus described my invention and its use I claim—

1. In a propeller, a propeller shaft provided with a spherical terminal having spiral grooves in the surface thereof extending



from one end to the other, in combination with propeller blades provided with dogs on their inner faces adapted to take into and travel in said grooves, and means for holding the propeller blades in position upon said terminal.

2. In a propeller, a propeller shaft provided with a spherical terminal having grooves in the surface thereof, in combination with propeller blades provided with dogs on their inner faces adapted to take

into and travel in said grooves, clamp members adapted to hold said blades upon said terminal, said clamp members and blades being provided with a complementary circular tongue and groove connection inclined to the shaft, and means for holding the clamp members in position.

MILTON D. THOMPSON.

Witnesses:

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