

No. 775,155.

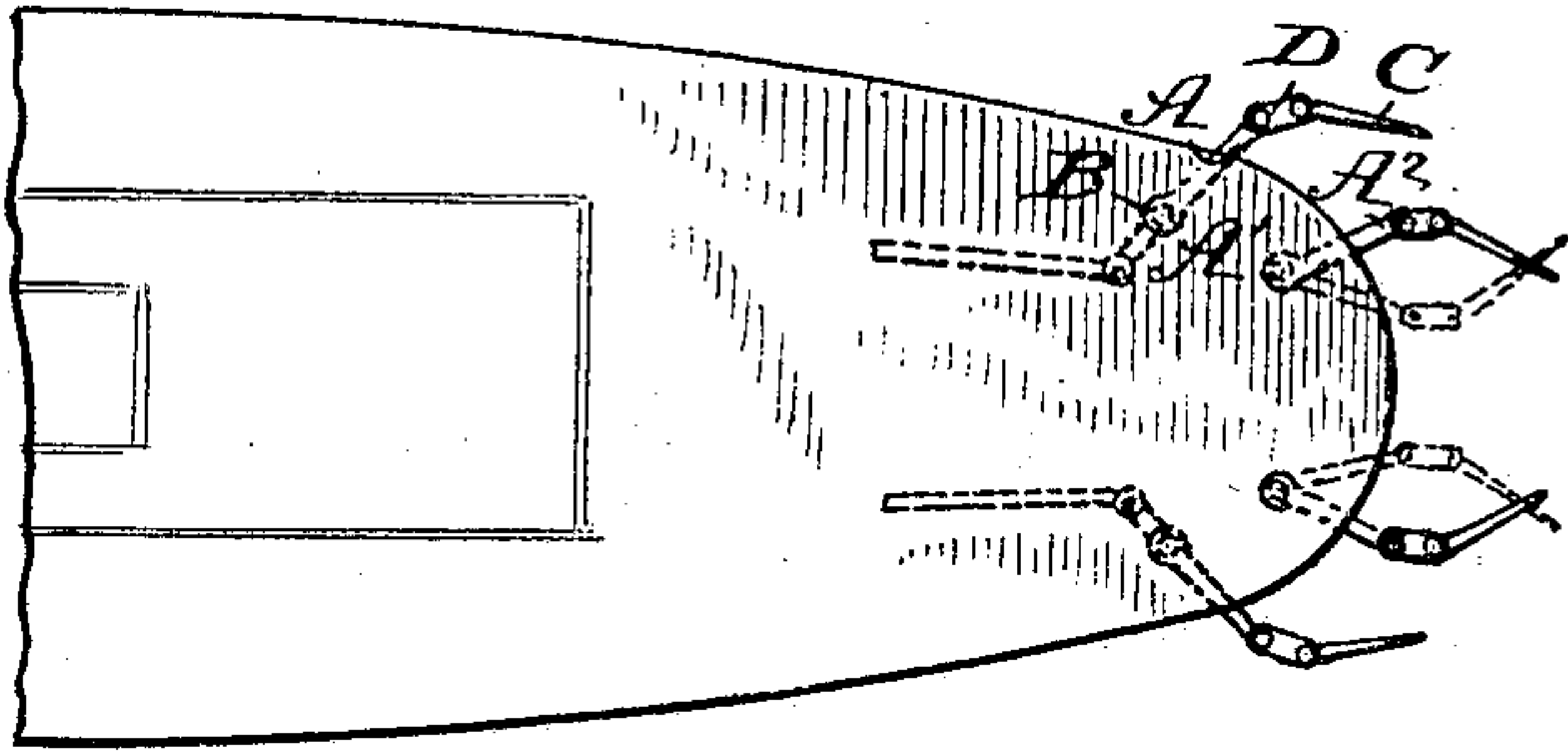
PATENTED NOV. 15, 1904.

T. G. THOMPSON.  
PROPELLER.

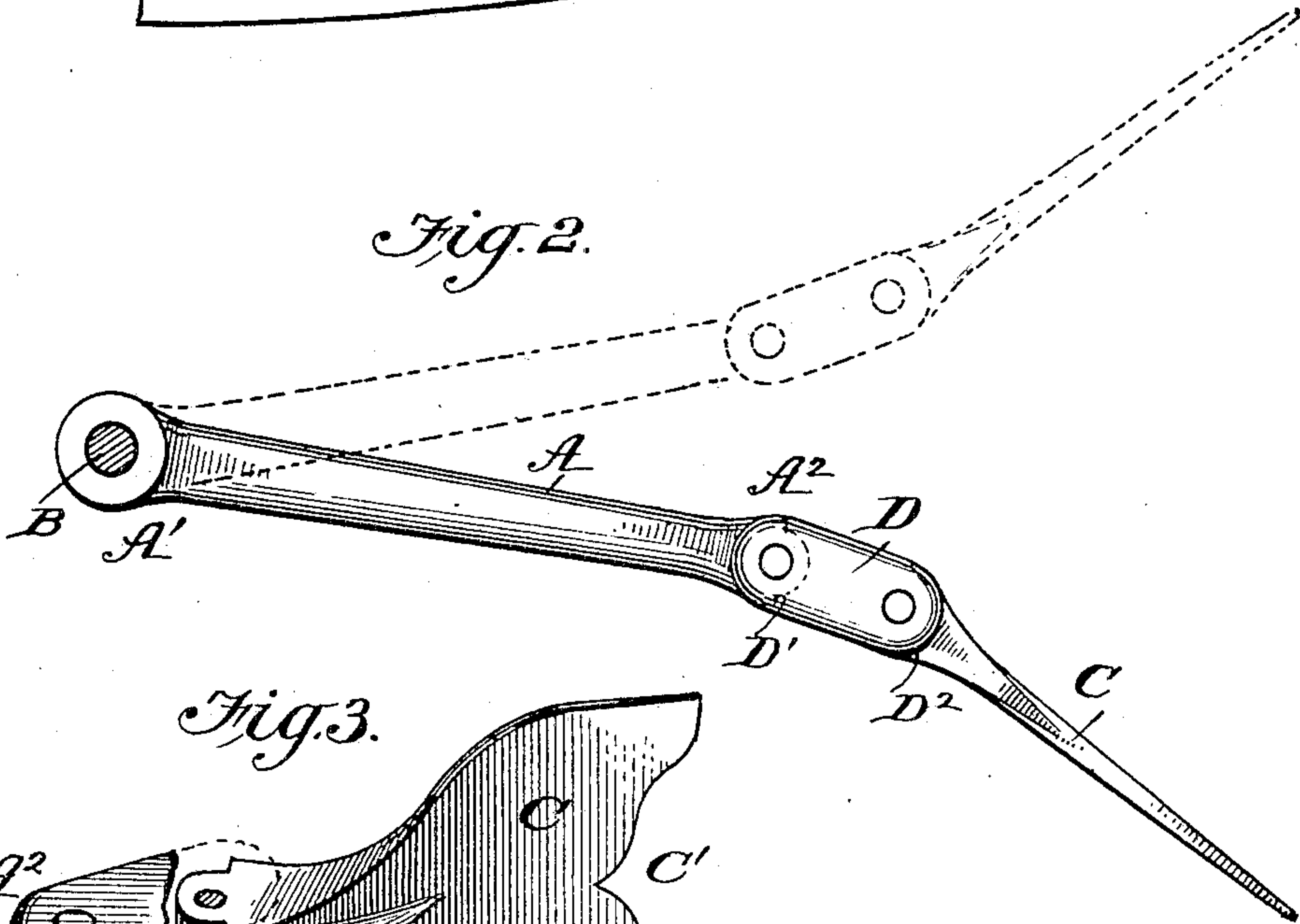
APPLICATION FILED FEB. 11, 1904.

NO MODEL.

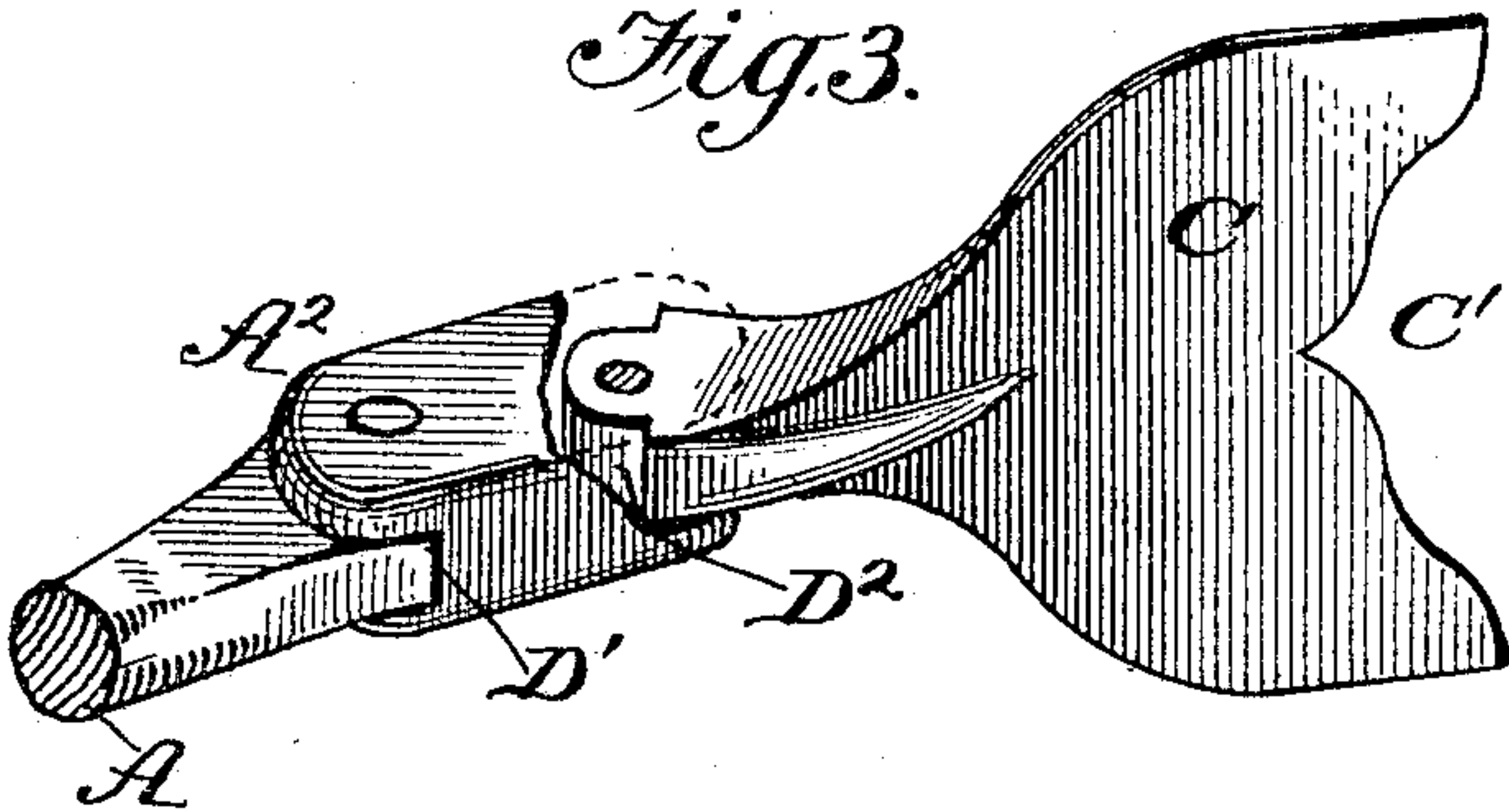
*Fig. 1.*



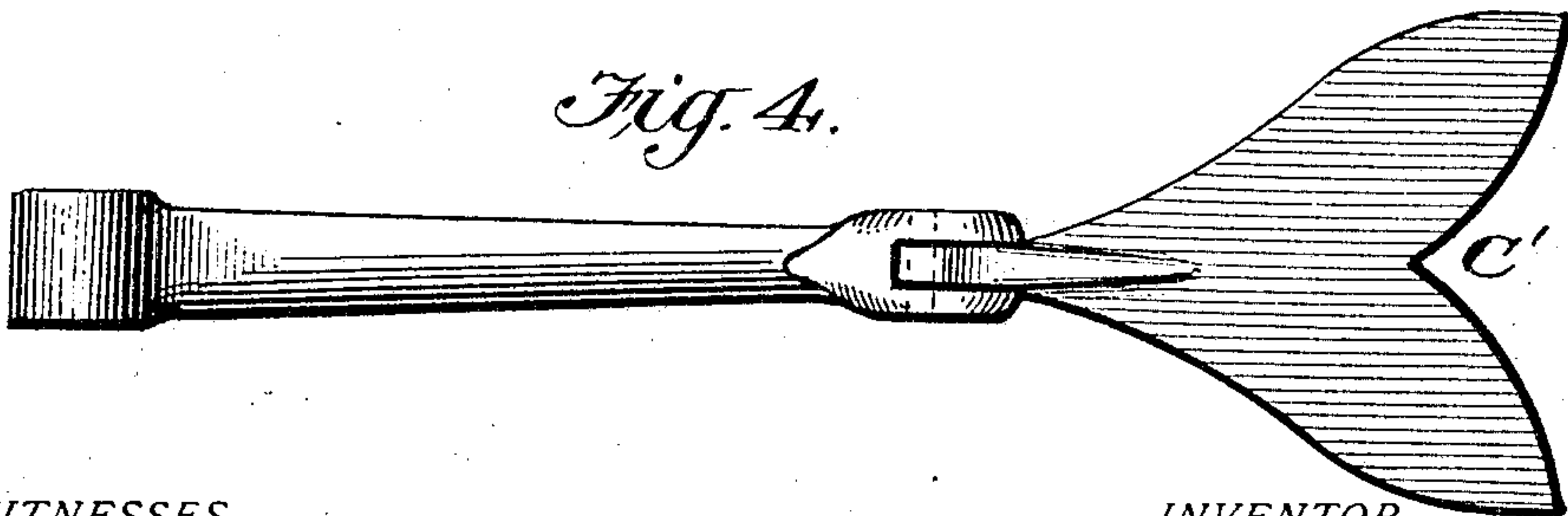
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



WITNESSES

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# UNITED STATES PATENT OFFICE.

TORGER G. THOMPSON, OF CAMBRIDGE, WISCONSIN.

## PROPELLER.

SPECIFICATION forming part of Letters Patent No. 775,155, dated November 15, 1904.

Application filed February 11, 1904. Serial No. 193,033. (No model.)

*To all whom it may concern:*

Be it known that I, TORGER G. THOMPSON, a citizen of the United States, residing at Cambridge, in the county of Dane and State of Wisconsin, have made certain new and useful Improvements in Propellers, of which the following is a specification.

My invention is an improvement in marine propulsion, and relates particularly to the construction of the propellers; and the invention consists in certain novel constructions and combinations of parts, as will be hereinafter described and claimed.

In the drawings, Figure 1 is a top plan view of the stern portion of a vessel provided with my propellers arranged for propelling as well as for steering the vessel, the propelling mechanism being shown in dotted lines. Fig. 2 is a detail top plan view of the propeller, illustrating the operation of same as the propeller-blade is swung from side to side. Fig. 3 is a detail perspective view of the propeller, partly broken away; and Fig. 4 shows a somewhat different construction within the broad principles of my invention.

By my invention I seek to provide a construction which in its operation will simulate closely the movements of a fish in propelling itself in the water, and to this end I provide what for convenience of reference I call the "main" arm, with the outer swinging end of which is connected the blade, so the latter can be swung bodily by the movements of the main arm on its center and also can swing on its pivotal connection with the main arm in such manner as to secure a double action in the propeller, resulting from the movements of the main arm with the blade and from the movements of the blade to a limited extent independently of the main arm.

In the construction shown the main arm A is pivoted at one end at A', preferably by securing the same upon a shaft B, having a crank or other suitable connection with a suitable drive power, so the main arm at its free end A<sup>2</sup> may be oscillated or swung from side to side, as will be understood from Figs. 1 and 2 of the drawings.

The blade C may be of any suitable form, that preferred being the fish-tail shape shown,

and such blade is pivoted in connection with the outer swinging end of the main arm, so the blade can swing with and independently of the main arm in the use of the invention. I find it important to so support the blade that it will have a free action from end to end upon the water, or, in other words, so there will be no obstruction or interposed part between the blade or any portion of the same and the water in order to secure the action of the full area or surface of the blade upon the water in the use of the invention. To this end I provide for pivoting the blade by a rule-joint, as shown, so the entire working surface of the blade will be freely exposed to the water and will act thereon with the greatest power.

So far as described above my invention may be carried out in the construction shown in Fig. 4, in which the blade while pivoted in connection with the swinging arm is pivoted directly to said arm. I prefer, however, in order to get the greatest throw or movement of the blade with the given stroke of the main arm to employ a connecting section or link D, which is pivoted or connected by a rule-joint D' at its inner end with the outer end of the main arm and has the inner end of the blade pivotally connected by a rule-joint with the outer end of the said section D at D<sup>2</sup>, as shown, so that when the arm A is swung to its greatest extent to one side or the other the blade may move beyond such line of movement in the main arm, but will give slightly on the return movement of the main arm in such manner as to ease the reversal of the movement of the said main arm in the operation of the invention. For such reason I prefer to employ the construction shown in Fig. 2, in which the main arm is connected with the blade by the intermediate section, so that in the reversing of the movement of the main arm the action of the blade upon the water will be gradual, thus avoiding any severe shocks upon the machinery and enabling me to get the best results in the action of the blade upon the water.

In addition to the use of the invention for propelling the vessel it will be understood that I may employ my novel form of propeller for steering the vessel as well, and in securing this result I may employ the propellers



in four sets at the stern of the vessel, two of the propellers being arranged at the sides of the vessel at its stern and utilized for steering the vessel, while the other two propellers  
 5 are arranged between the steering-propellers and are employed for the purpose of propelling the vessel, as desired. The steering may be effected by operating one or the other of the side propellers at will, the propeller at  
 10 one side being operated while the opposite side propeller is at rest, or said side propellers may be operated with different force or at different speeds in order to secure the desired steering of the vessel.

15 The construction is simple, easily applied to the vessels, can be easily operated, and will be found efficient in practical use.

By making the blade with its outer end recessed or incut at C', as shown in Figs. 3 and  
 20 4, the blade will operate with greater ease and more effect in the water.

The propeller will have the same power or action on the water whether it be operated fast or slow.

25 Manifestly the propellers may be employed in any desired number, especially on river or large ferry-boats having wide sterns, the propellers being arranged in a series from side to side at the stern.

30 The invention can be used on large vessels or small ones, on flat or other boats, can be operated singly or in pairs, and will increase the speed of vessels, and will reduce the expenditure of power, and can also be used in  
 35 aerial navigation.

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

40 1. The combination substantially as described of the vessel, the propellers arranged at the stern thereof and at the opposite sides of the vessel and adapted for steering the same and the intermediate propellers between the steering-propellers for propelling the vessel,  
 45 such propellers consisting of a main arm arranged to be oscillated from side to side, an

intermediate section, rule-jointed at one end to the swinging end of the main arm and the blade, rule-jointed at its inner end to the outer end of the intermediate section substantially  
 50 as set forth.

2. A propeller substantially as described comprising a main arm adapted to be oscillated whereby to swing its outer end from side to side, and a blade pivoted at its inner  
 55 end in connection with the outer end of the main arm and oscillating freely in both directions beyond the line of the main arm and having throughout its area an unobstructed surface for operation upon the water substan-  
 60 tially as set forth.

3. The propeller herein described comprising the main arm adapted to be oscillated whereby its outer end may be swung from side to side, the intermediate section rule-jointed  
 65 at its inner end in connection with the outer swinging end of the main arm, and the blade rule-jointed at its inner end in connection with the outer end of the intermediate section and adapted to operate substantially as and for the  
 70 purposes set forth.

4. A propeller comprising a main arm adapted to be oscillated whereby its outer end may be swung from side to side, an intermediate section pivoted at its inner end to the outer  
 75 end of the main arm, and the blade pivoted at its inner end to the outer end of the intermediate section whereby the said blade may be swung with the main arm and may also have a limited movement independent of the main  
 80 arm substantially as set forth.

5. A propeller comprising an oscillating carrier and a blade rule-jointed at its inner end in connection with the outer end of the oscillating carrier and arranged and adapted  
 85 to oscillate freely in both directions beyond the line of the main arm and to operate substantially as set forth.

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Witnesses:

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