

No. 813,074.

PATENTED FEB. 20, 1906.

C. E. BARBER.
BOAT PROPELLER.

APPLICATION FILED APR. 13, 1905.

2 SHEETS—SHEET 1.

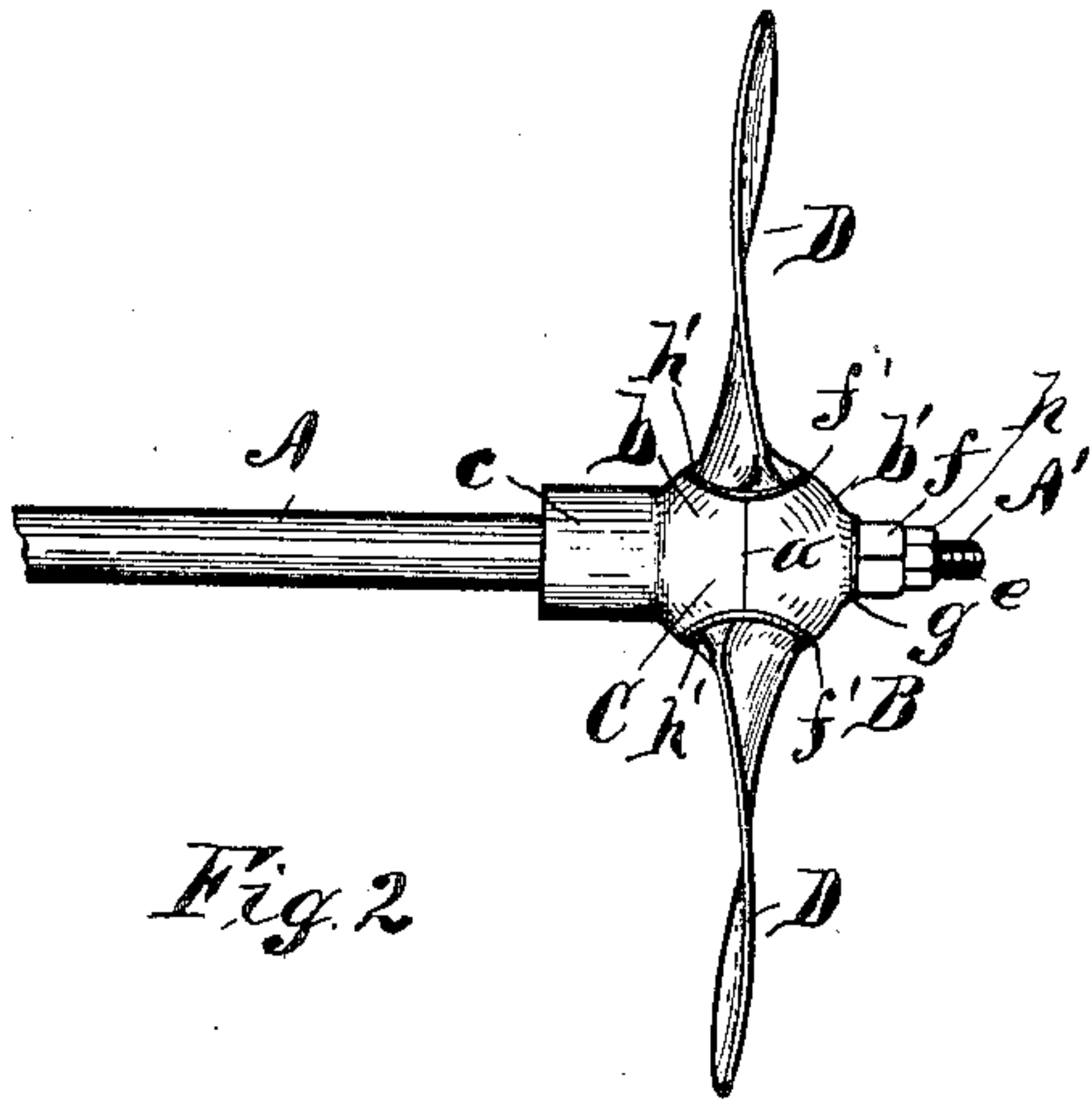


Fig. 2

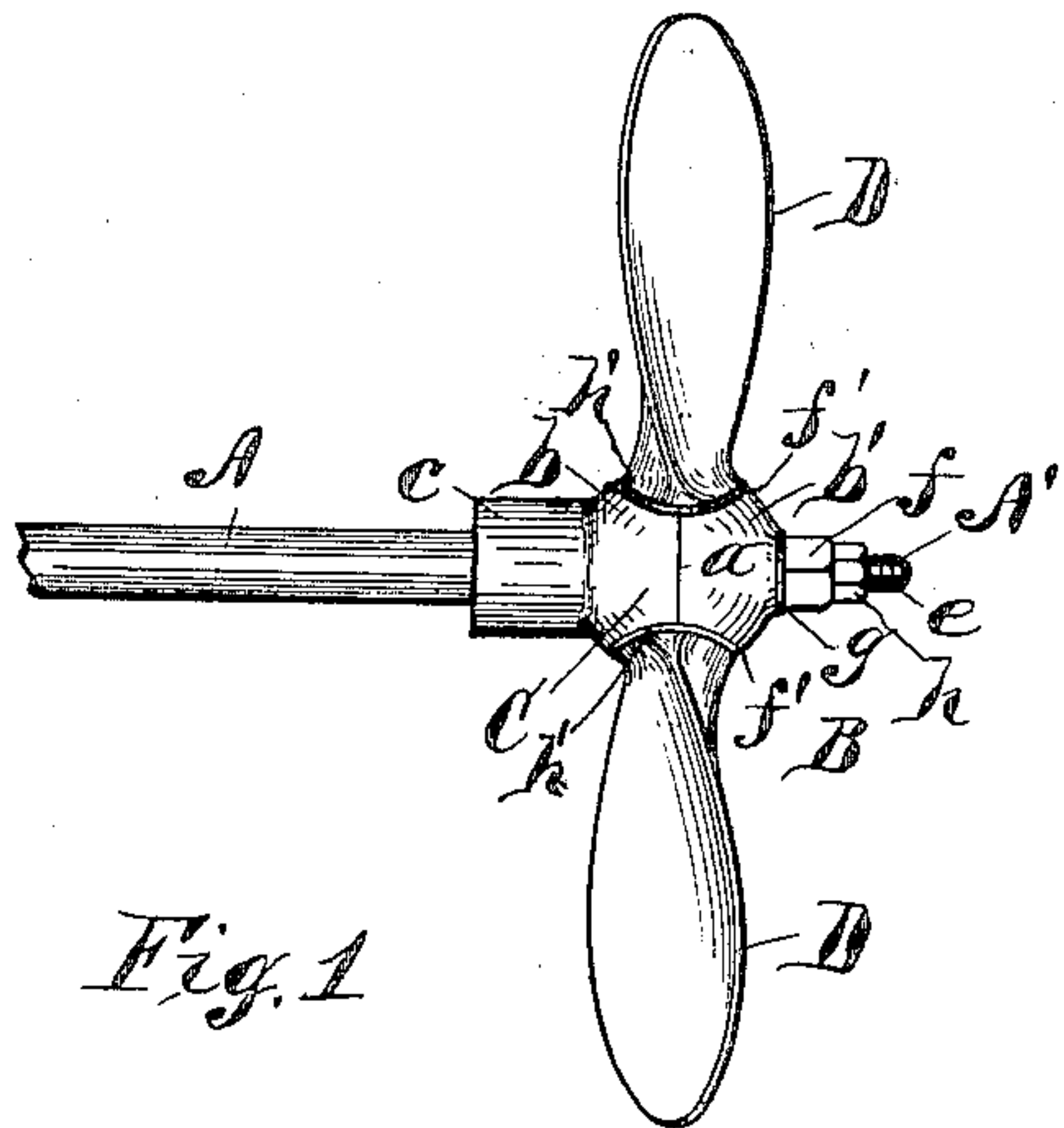


Fig. 1

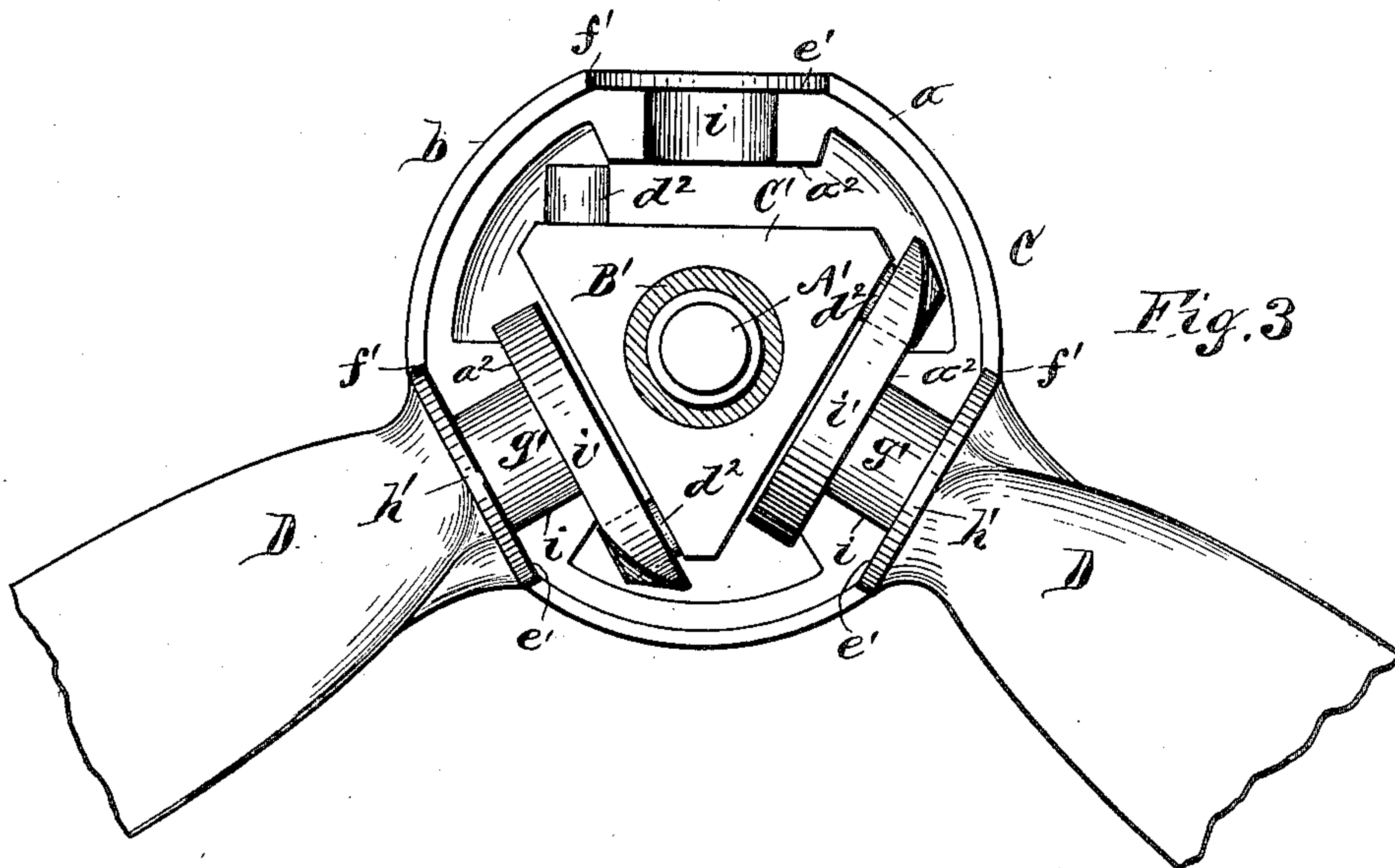


Fig. 3

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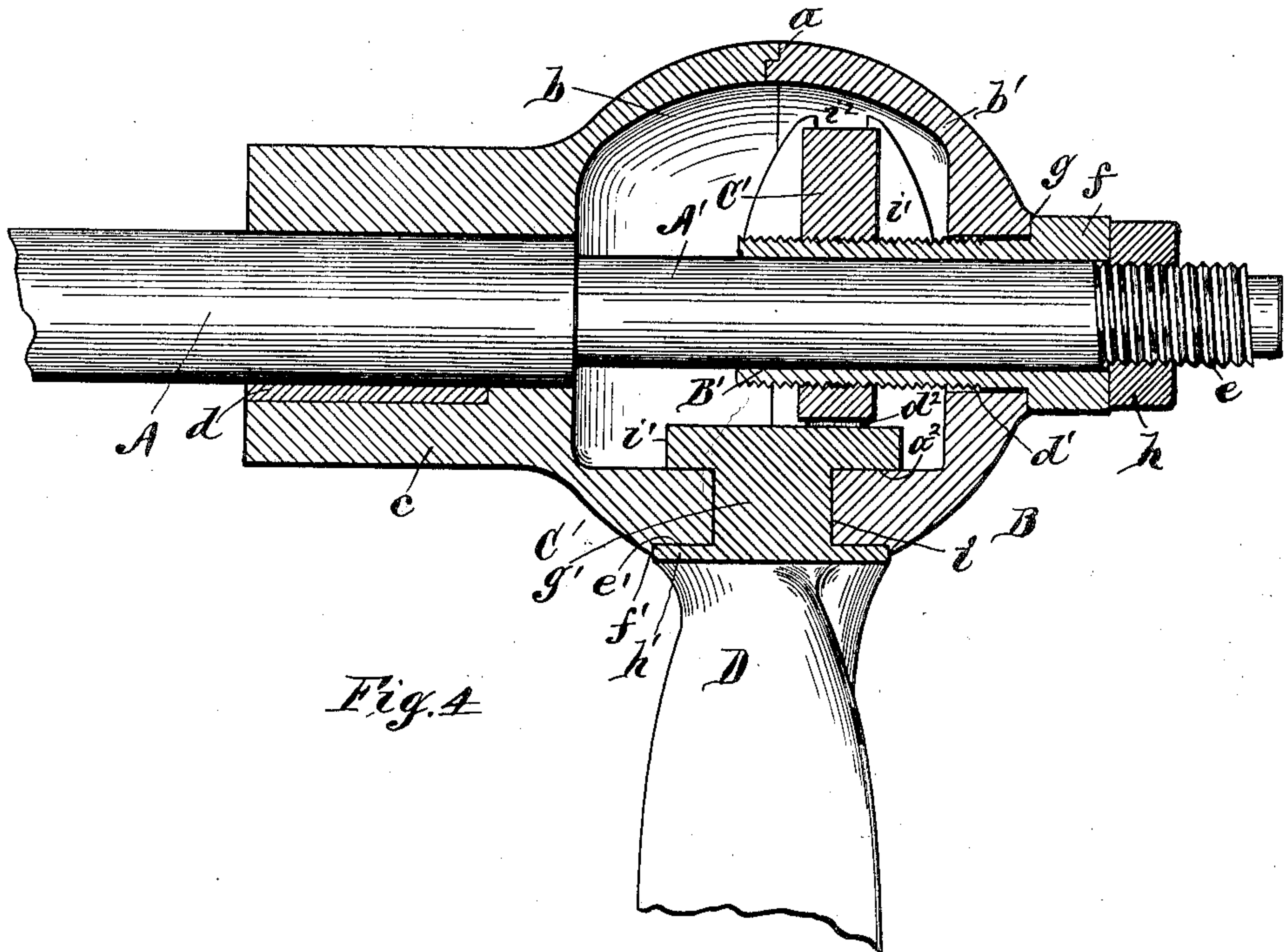


Fig. 4

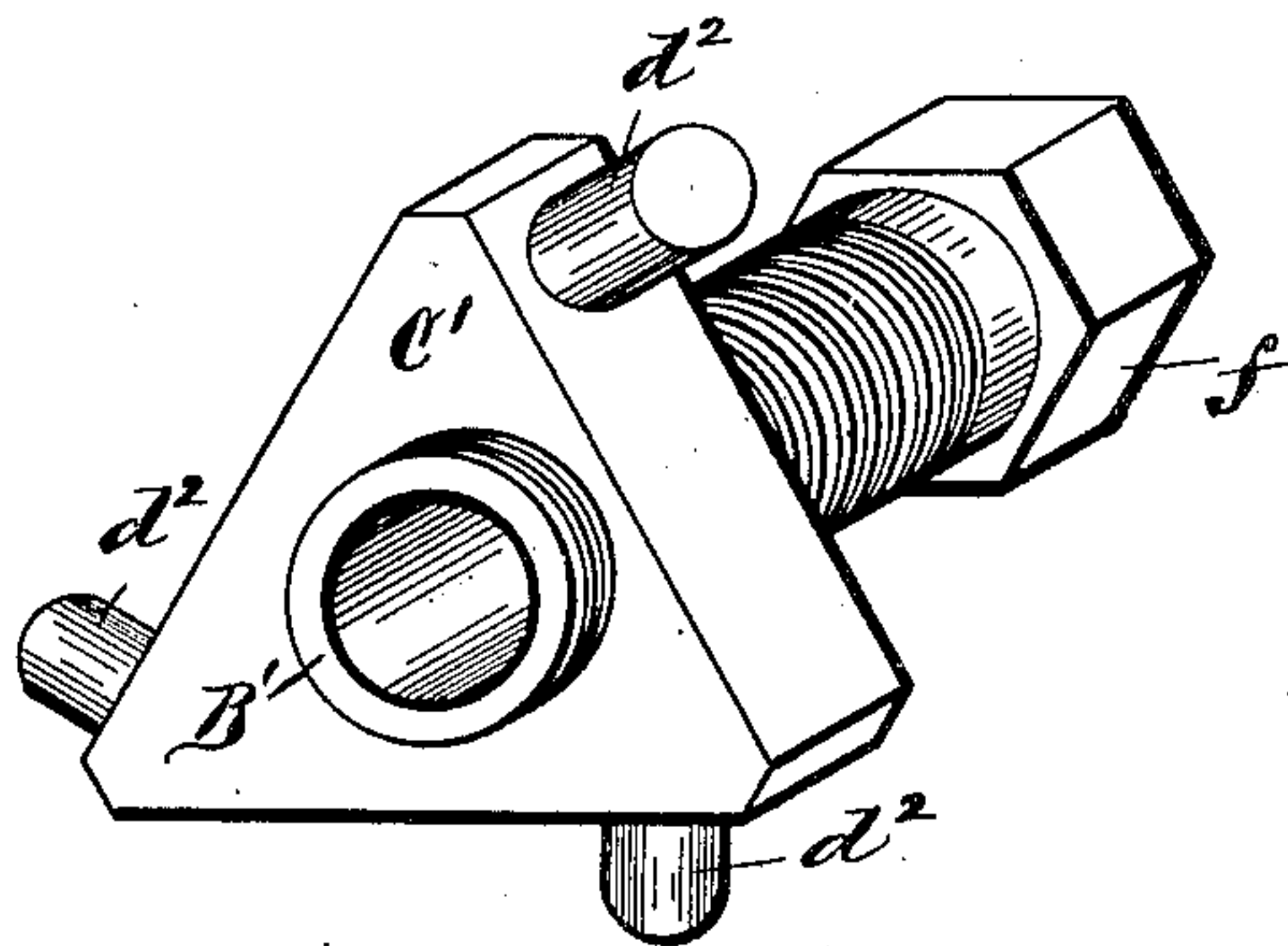


Fig. 5

Fig. 6

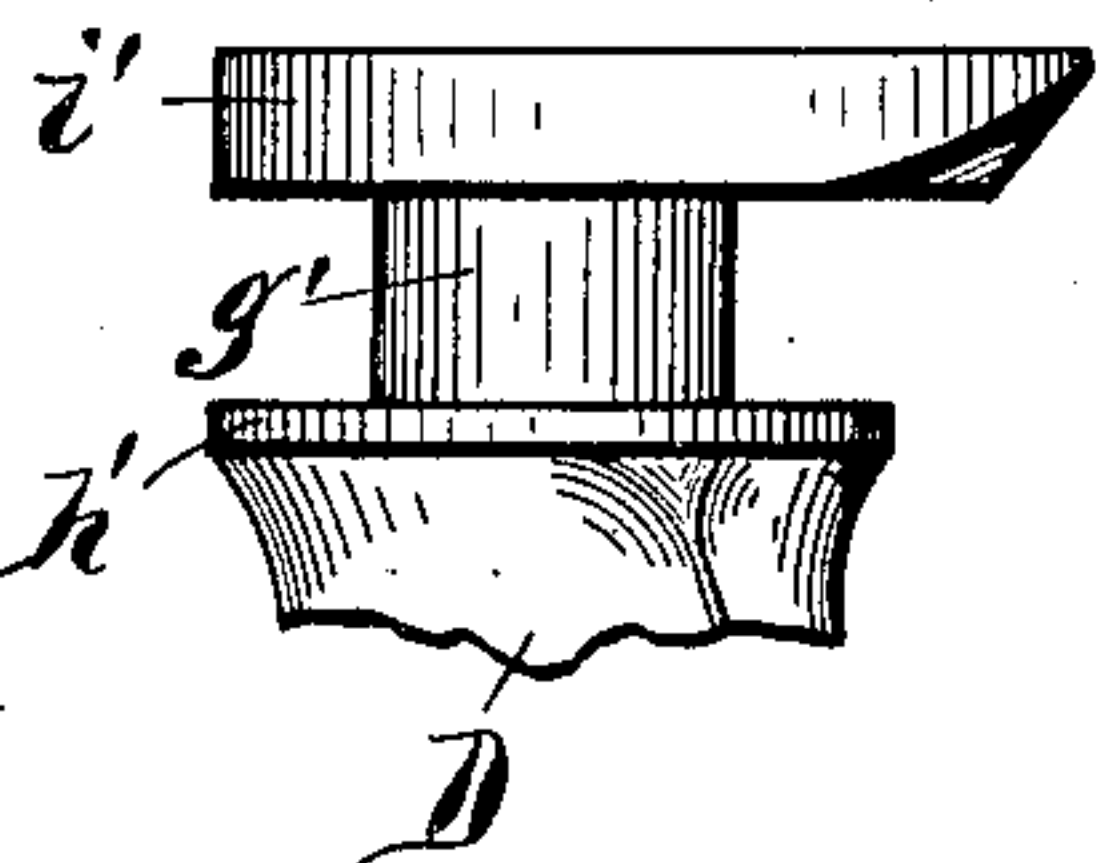
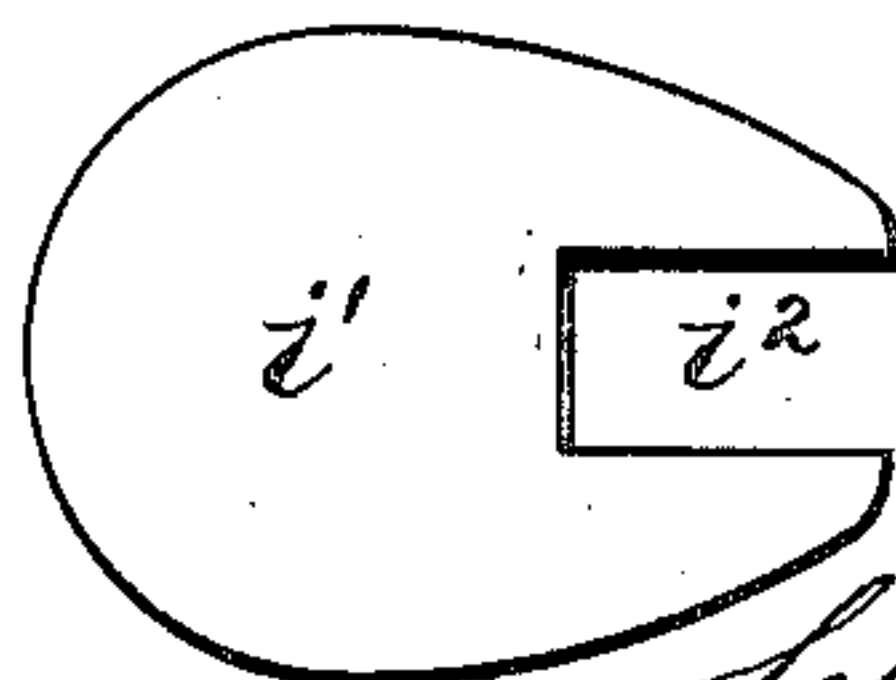


Fig. 7



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CHARLES E. BARBER, OF SYRACUSE, NEW YORK.

BOAT-PROPELLER.

No. 813,074.

Specification of Letters Patent.

Patented Feb. 20, 1906.

Application filed April 13, 1905. Serial No. 255,266.

To all whom it may concern:

Be it known that I, CHARLES E. BARBER, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Boat-Propellers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention pertains to steam and other power-driven boats, and relates to the class of propellers which embody a wheel comprising a set of blades disposed radially in relation to the driven shaft and adapted to be adjusted in their positions.

The invention has special reference to the type of propeller-wheels shown and described in my prior application for patent filed April 1, 1905, Serial No. 253,216.

The main object of the present invention is to provide a propeller-wheel of the above character which can be easily and conveniently adjusted to regulate the pitch of the blades to obtain the desired maximum rate of speed of the boat with the utilization of the full capacity of the engine or motor driving the same.

Another object is to provide a propeller-wheel which shall be simple, strong, and durable in construction, efficient in its operation, and which shall permit a blade to be readily removed and replaced when required.

To that end the invention consists in the novel arrangement and combination of the component parts of the propeller-wheel, as hereinafter fully described, and set forth in the claims.

In the accompanying drawings, Figures 1 and 2 are side views of a propeller-wheel embodying my invention and showing the extreme adjustments of the blades. Fig. 3 is an enlarged rear view of the hub minus the removable section. Fig. 4 is an enlarged longitudinal section of the same. Fig. 5 is an enlarged detail perspective view of the manually-operated devices by which the blades are axially turned. Fig. 6 is an enlarged detail side view of the pivotal end of a blade, and Fig. 7 shows a face view of the slotted collar formed on said end of the blade.

Similar letters of reference indicate corresponding parts.

A denotes the shaft, which extends lengthwise the boat and rotated by the engine or motor in the usual and well-known manner.

B represents the propeller-wheel, which comprises, essentially, a hollow spherical hub

C and a set of blades D D, disposed radially and pivotally secured to said hub, as will be shortly described. Said hub is divided transversely, as indicated at *a*, to produce two sections *b b'*. The section *b* is formed with a tubular portion *c*, which is mounted on the shaft A and rigidly secured thereto, preferably by means of a key *d*, and the other or outer section *b'* is removable and is provided with a plain annular opening *d'*, through which the reduced portion A' of the shaft extends, the end of which shaft is provided with a screw-thread, as indicated at *e*. Upon said portion A' of the shaft is mounted a revoluble sleeve B', which extends through the opening *d'* of the hub-section *b'* and is exteriorly screw-threaded to engage a nut C', disposed within the hub, which nut is preferably of triangular shape and formed with studs *d² d²*, projecting at right angles from the respective sides. The outer end of said sleeve is formed with a square or polygonal head *f* for the application of a wrench for turning the same, which head is adapted to abut against an annular bearing-surface *g*, formed on the exterior of the hub-section *b'* at the opening *d'*, as more clearly shown in Fig. 4 of the drawings. To the screw-threaded portion of the shaft is applied a jam-nut *h*, engaging the head *f*. The hub is provided with radially-disposed annular openings *i i* at the line of division and formed with annular exterior bearing-surfaces *e' e'*, surrounding the openings, which surfaces are provided with rabbets *f' f'*, as shown in Fig. 4 of the drawings.

Each of the aforesaid blades D D is formed with a short stem *g'* at its inner end, by which it is pivoted in an opening *i*, and formed with a shoulder *h'*, abutting against the bearing-surface *e'* thereat. The said stems *g'* are each formed with a collar *i'*, elongated transversely at one side and provided with a transverse slot *i²*. These slotted collars are engaged by the studs *d² d²*, projecting from the aforesaid nut C', and they abut with their outer faces against similar bearing-surfaces *a² a²*. By these abutments of the collars and shoulders of the blades the latter are sustained on the hub, as more clearly shown in Figs. 3 and 4 of the drawings.

In order to adjust the blades D D to increase the maximum speed of the boat, the jam-nut *h* is first loosened. Then by applying a wrench to the head *f* and turning the sleeve B' to the right the nut C' is moved toward

the head, whereby the engaging slots $i^2 i^2$ and studs $d^2 d^2$ turn the blades axially to increase the pitch of the blades. After the blades have been turned to the desired degree the jam-nut is tightened to retain the blades in their positions. It will be understood that in order to reduce the maximum speed of the boat the jam-nut is loosened slightly as before. In this instance the sleeve is turned in reverse direction, and by reason of the head f abutting against the jam-nut the aforesaid nut C' is caused to travel inwardly, thereby turning the blades to diminish the pitch thereof, and after the blades have been turned to the desired degree the jam-nut is tightened as before.

By this arrangement and construction it will be seen that the hub-section b' can be readily removed to permit the blades to be independently detached from the hub, if required for repairs or renewal.

What I claim is—

1. In a boat-propeller of the class described, the combination of a rotary shaft, a wheel mounted on said shaft and comprising a set of radially-disposed pivoted blades, a member operative for axially turning said blades to regulate the pitch thereof, and a manually-operated revoluble sleeve mounted on the shaft and actuating said member as set forth.

2. In a boat-propeller of the class described, the combination of a rotary shaft, a wheel mounted on said shaft and comprising a hollow hub and a set of radially-disposed blades pivoted to the hub, a member disposed within the hub operative for axially turning the blades to regulate the pitch thereof, a manually-operated sleeve movable on the shaft and extending into the hub for actuating said member, and clamping means engaging the sleeve for retaining the blades in their adjusted positions as set forth.

3. In a boat-propeller of the class described, the combination of a rotary shaft, a wheel mounted on said shaft and comprising a hub having a hollow portion and a set of radially-disposed blades pivoted thereto, an exteriorly-screw-threaded sleeve revolubly embracing the shaft and extending into the hub, means for sustaining the sleeve against endwise movement, and a nut mounted on the

sleeve within the hub and engaging the blades and operative for turning the latter axially to regulate the pitch thereof.

4. In a boat-propeller of the class described, the combination of a rotary shaft provided with a screw-thread at its rear end portion, a wheel comprising a hub having a hollow transversely-divided spherical portion, the inner section being rigidly secured to the shaft, and the outer section removable, and provided with an axial opening through which the shaft protrudes, the said hub formed with radially-disposed openings at the line of division, blades pivoted in said openings and provided with slotted portions at their pivoted ends within the hub, an exteriorly-screw-threaded sleeve mounted revolubly on the shaft and extending through the aforesaid axial opening and provided with a head abutting against the exterior of the hub to prevent inward movement of the sleeve, and by which the sleeve turned, a nut mounted on the sleeve within the hub and provided with studs engaging the slotted portions of the blades, whereby the rotation of the sleeve shifts the nut longitudinally to turn the blades axially to regulate the pitch of the latter, and a jam-nut mounted on the shaft serving to sustain the sleeve against outward movement and to lock the blades in their adjusted positions as set forth.

5. In a boat-propeller of the class described, the combination of a rotary shaft, a wheel mounted thereon and comprising a hollow hub and radially-disposed blades pivoted thereto and provided with transversely-slotted collars within the hub, an exteriorly-screw-threaded sleeve mounted revolubly on the shaft and extending into the hub, means for sustaining the sleeve against endwise movement, means for revolving the sleeve, a nut mounted on the sleeve within the hub and provided with studs on its edges engaging the slotted collars, whereby the blades are turned axially to regulate the pitch of said blades, and means for locking the blades in their adjusted positions as set forth.

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Witnesses:

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