

W. L. CASADAY.
WEEDLESS OR SELF CLEARING PROPELLER.
APPLICATION FILED AUG. 1, 1907.

911,939.

Patented Feb. 9, 1909.

2 SHEETS—SHEET 1.

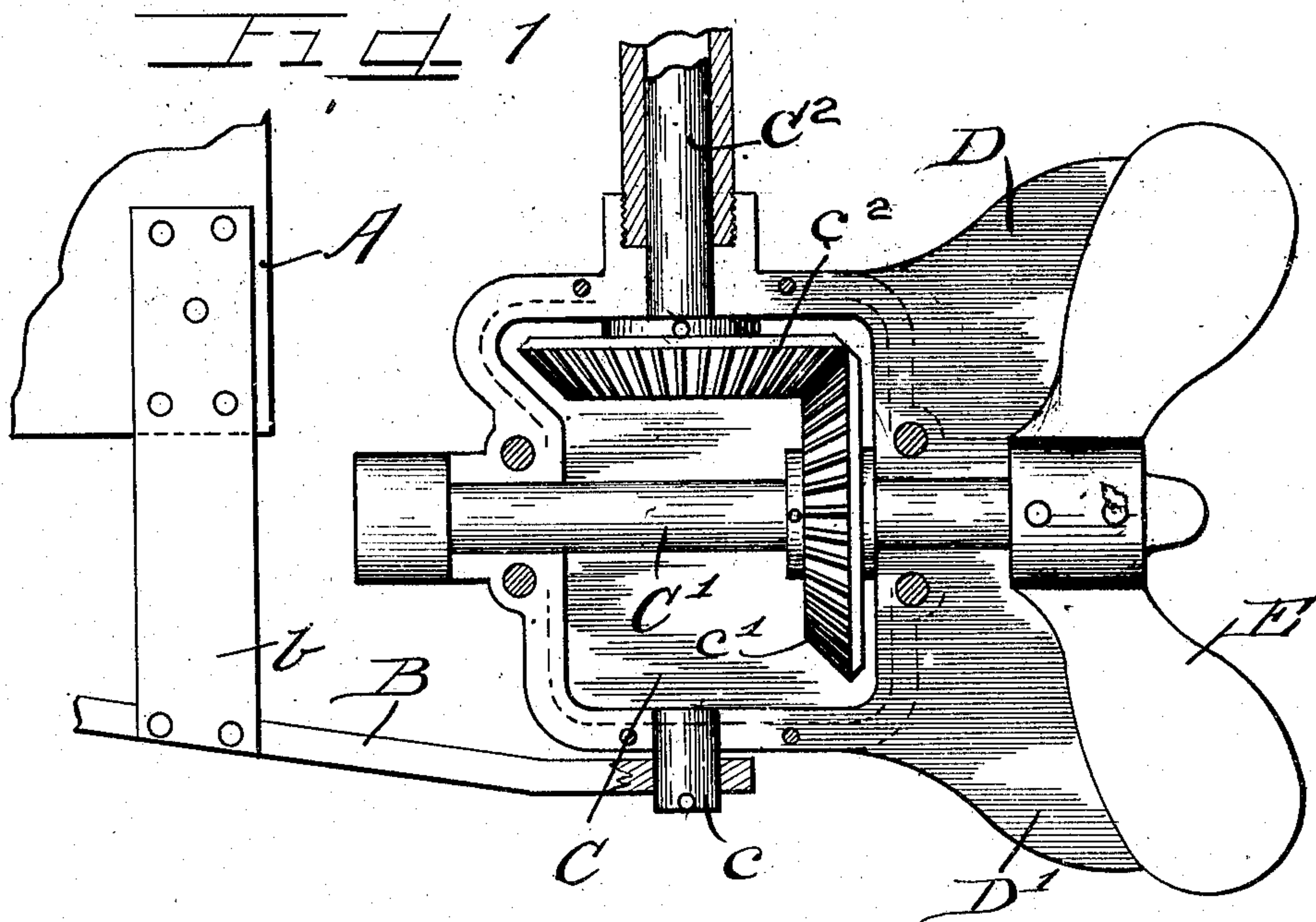


FIG 2

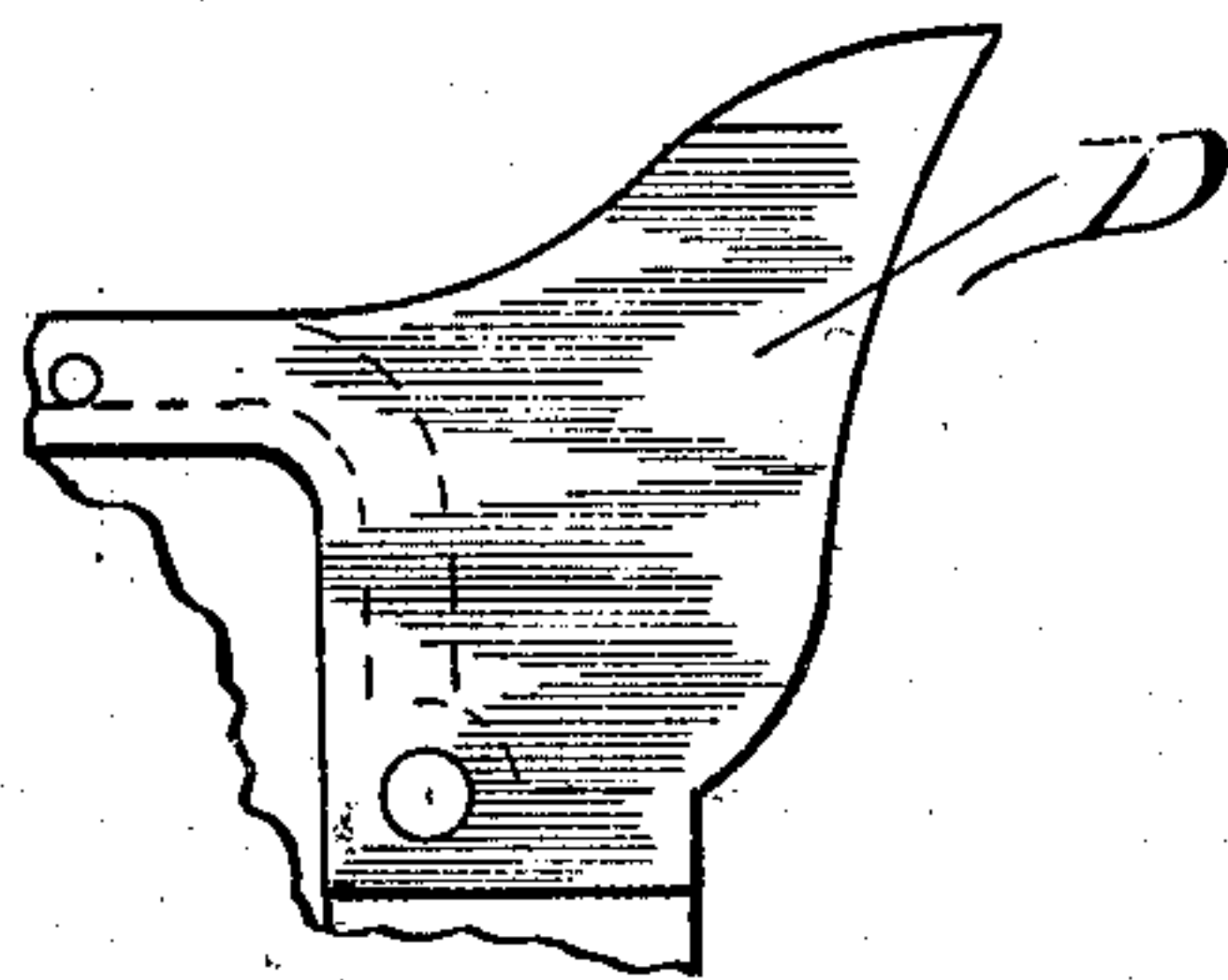


FIG 3

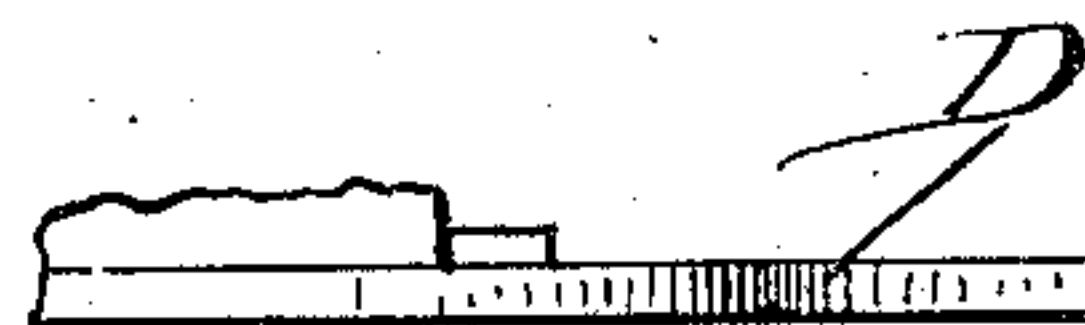
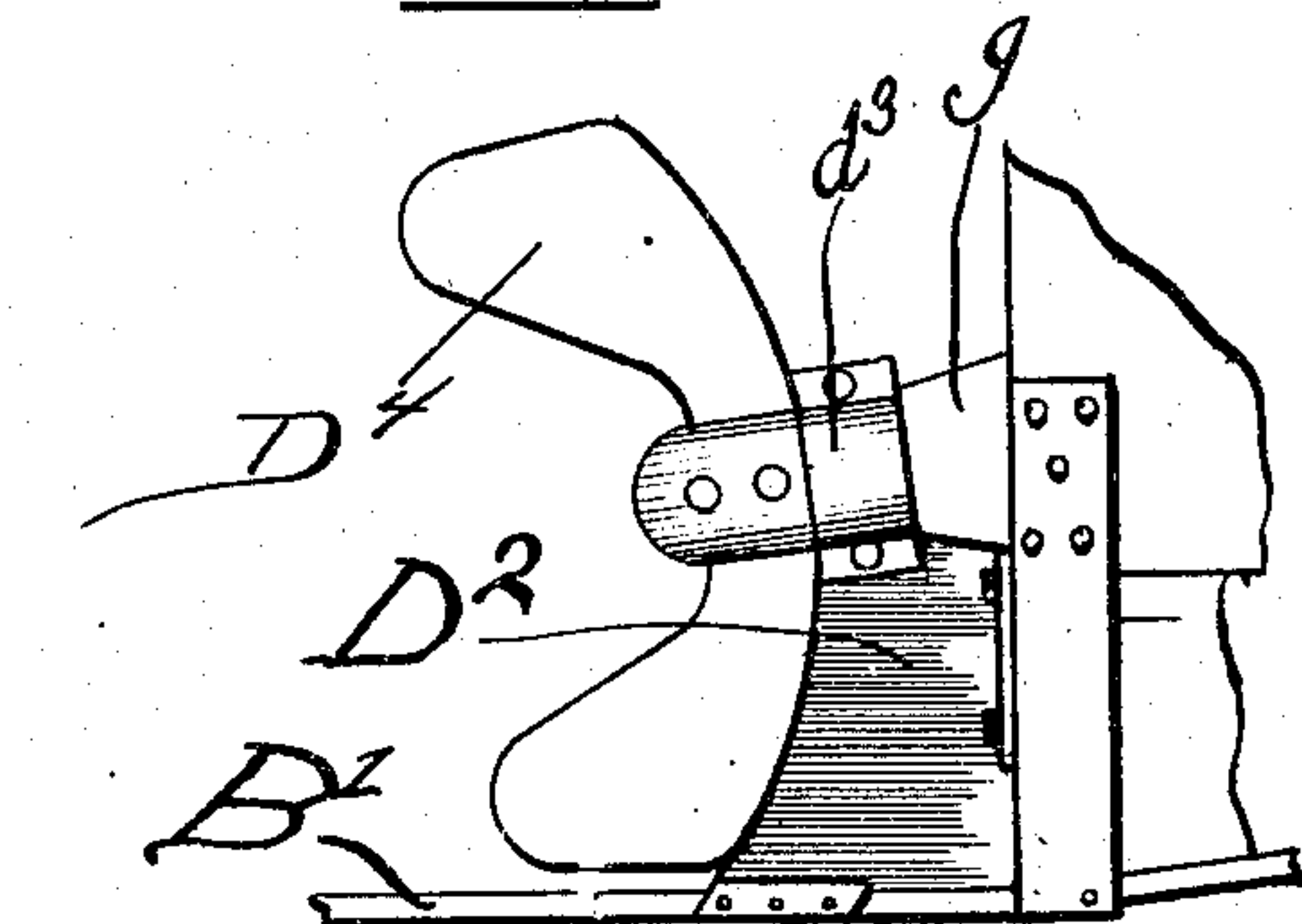


FIG 8



WITNESSES

J. H. Angell.
J. E. Kammah

INVENTOR

William L. Casaday,

by Charles E. Rice, ATTORNEY.

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FIG 4

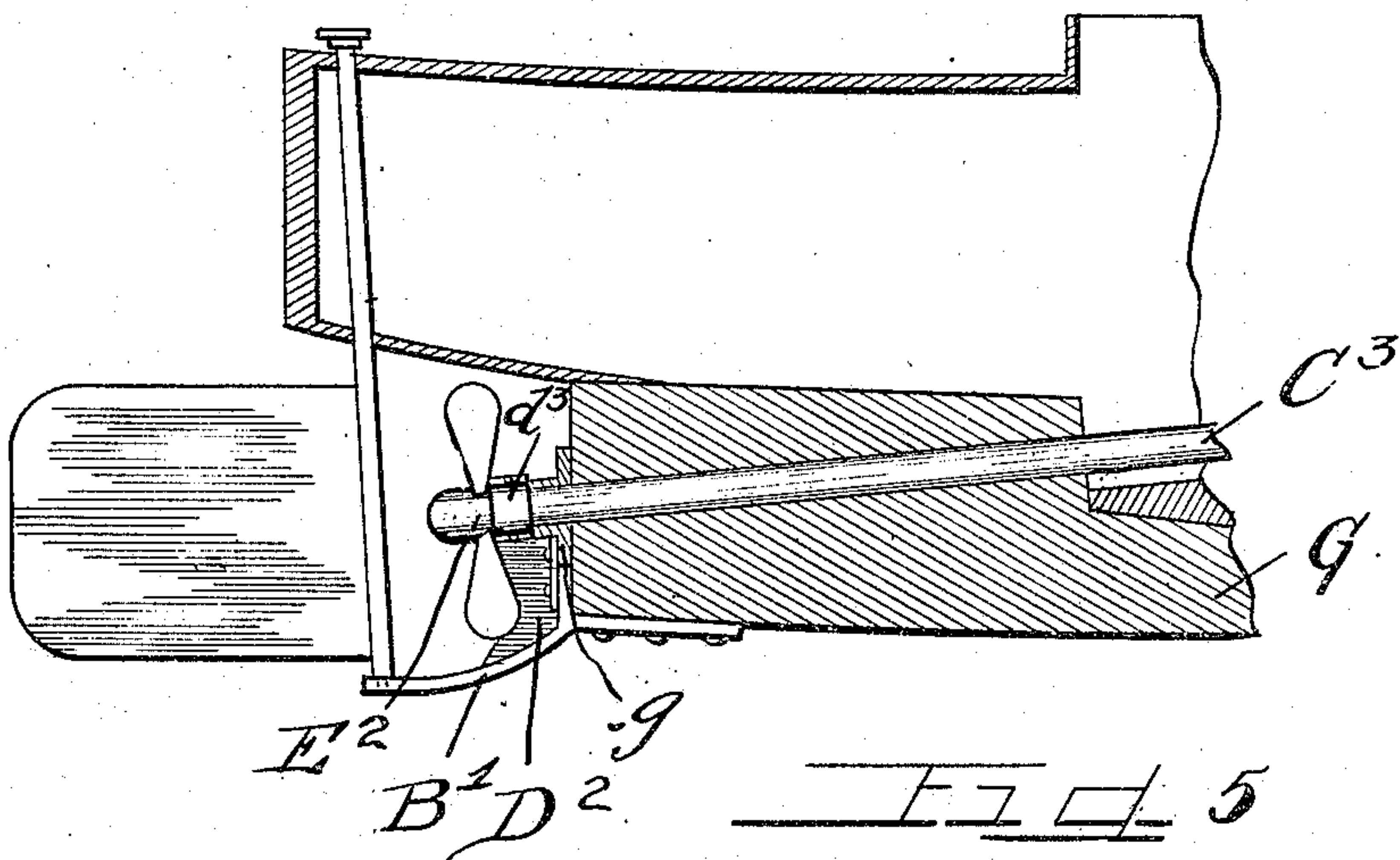


FIG 5

FIG 6

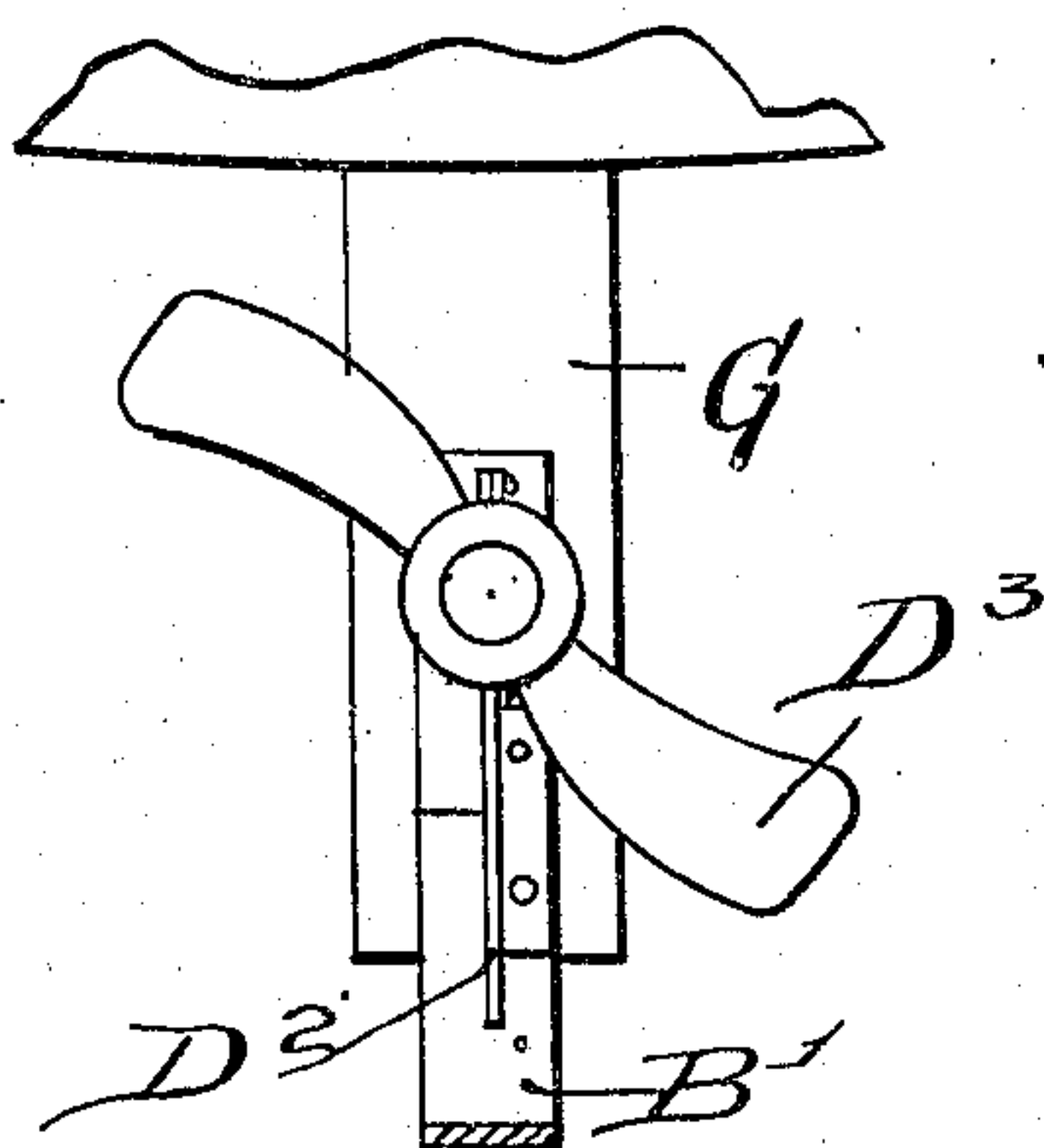
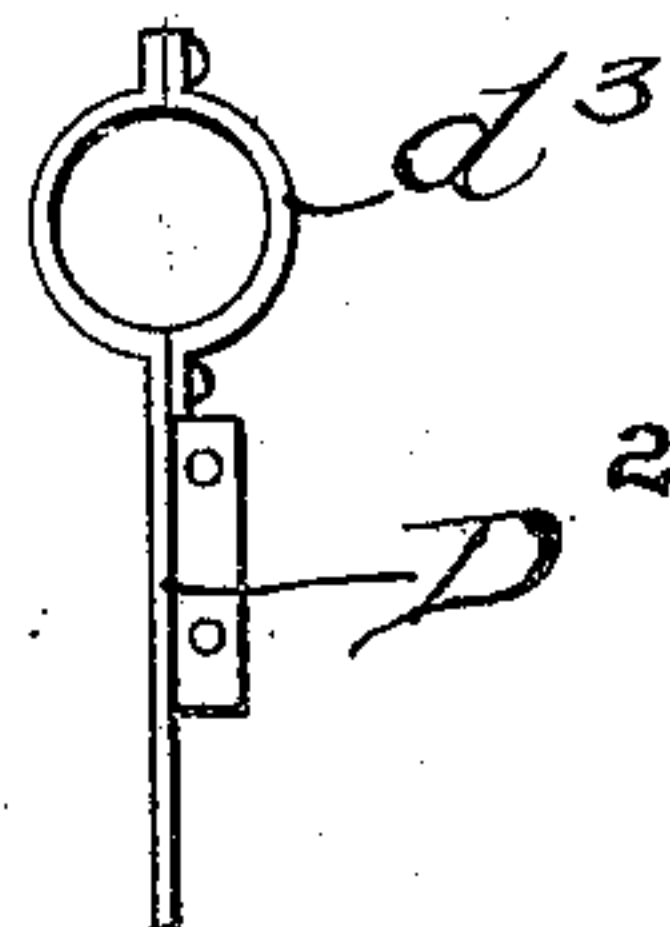
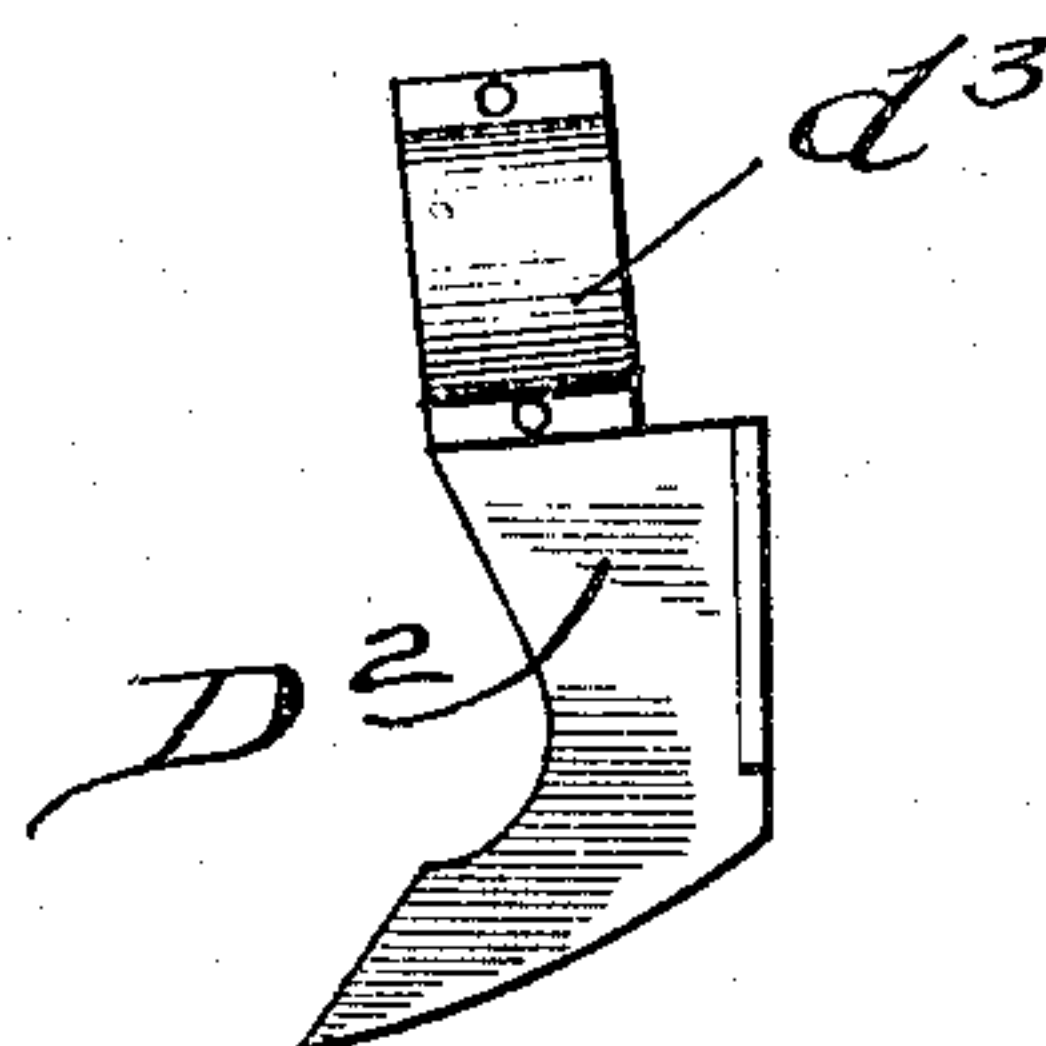


FIG 7



WITNESSES

J. H. Angell.
McKinnah

INVENTOR

William L. Casaday

by Charles E. Wheeler, Atty.

UNITED STATES PATENT OFFICE.

WILLIAM L. CASADAY, OF SOUTH BEND, INDIANA.

WEEDLESS OR SELF-CLEARING PROPELLER.

No. 911,939.

Specification of Letters Patent.

Patented Feb. 9, 1909.

Application filed August 1, 1907. Serial No. 386,604.

To all whom it may concern:

Be it known that I, WILLIAM L. CASADAY, a citizen of the United States, and a resident of South Bend, St. Joseph county, Indiana, have invented certain new and useful Improvements in Weedless or Self-Clearing Propellers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to weedless or self-clearing propellers and is shown embodied more particularly as a propeller for launches or small boats though adaptable for use by vessels or boats of any desired size.

Heretofore in weedy water or water where kelp, bulrushes, sea-weed or other floating or suspended vegetation is found, it has been difficult if not impossible to successfully navigate boats driven by rotary propellers inasmuch as the vegetation soon winds upon the shaft about the wheel forming a ball of matter that may break the shaft or propeller wheel, or in motor boats almost invariably stops the engine.

The object of this invention is to provide a self-clearing or weedless propeller by the use of which vegetation of any kind cannot clog or gather upon the shaft.

It is a further object of the invention to afford a propeller and coacting means engaged upon the boat and together acting to shear or cut vegetation or other material that would otherwise wind upon and accumulate upon the shaft or about the propeller.

It is further an object of the invention to afford a propeller in which the shape of the propeller itself assists in clearing the same of weeds and by the use of which together with coacting stationary knives on the boat, accumulation of weeds is impossible.

It is also an object of the invention to afford a knife adapted to be rigidly engaged upon a boat in position to coact with a cutting edge on each bucket of the propeller wheel whereby any material that would otherwise wind around the shaft is severed therefrom.

It is finally an object of the invention to provide in connection with a device such as described, a cutting mechanism to coact with the blades of a propeller and which are so shaped at the forward edges as to permit any adherent material such as vegetation to be

drawn over the same and discharged at the rear of the boat.

The invention consists of the matters hereinafter described and more fully pointed out and defined in the appended claims.

In the drawings: Figure 1 is a fragmentary side elevation partly in section of a device embodying my invention. Fig. 2 is a face view of the knife used in the construction shown in Fig. 1. Fig. 3 is an edge view of the knife. Fig. 4 is a longitudinal section of the rear end of a motor boat and illustrating the application of the weed cutter to coact with the propeller. Fig. 5 is an enlarged edge view of the same. Fig. 6 is an enlarged fragmentary rear elevation of the propeller and knife. Fig. 7 is an enlarged side elevation of the knife. Fig. 8 is a detail illustrating a modified form of propeller which coacting with a suitable knife engaged in operative relation thereto, assists in the clearing of weeds or the like.

As shown in the drawings: A indicates the stern post of the boat and B a skeg or rudder shoe which is supported from the stern post by an extension *b* bolted to both, and projects any suitable distance rearwardly. Journaled in the after end of the skeg by means of a suitable gudgeon *c* is a gear box or casing as shown in Fig. 1 comprising as shown two approximately equal sections C between which when rigidly secured together is engaged the forward edge or end of the knives D and D' or the knife may be cast integrally with either section of the gear casing. Within the casing as shown is journaled the propeller shaft C' which extends rearwardly through the casing and is provided on its outer end with the propeller wheel E. Rigidly secured on the shaft C' within the casing is a bevel gear *c'* which meshes with a corresponding bevel gear *c''* also in the casing to which is rigidly engaged an upwardly directed shaft C² at the upper end of which is secured a motor of any suitable kind and means for pivoting the shaft to the stern of the boat, or the motor may be within the boat and the shaft thereof extend upwardly above the counter and engage the upper end of the shaft C² by means of bevel gears. Either of these arrangements is well known and forms no part of my invention.

The propeller E as shown may be provided with any desired number of blades or buckets which may be of any preferred or usual conformation. As shown, however, the

same incline rearwardly and the forward edge of each blade or bucket is shaped to afford a cutting edge on each side. The knife or knives D—D' are shaped at their rear edges to conform closely with the propeller blades as the same rotate, and as shown in Figs. 2 and 3 is provided with a square edge whereby either of the rear angles at the edge affords a cutting edge to coact with the corresponding angle on the respective propeller blades. Of course, the blades or buckets of the propeller being set obliquely as is usual, afford a shearing cut with the knives D—D' thereby most effectively severing any strands of seaweed, lines, or other material that might otherwise be wound around the shaft though of course the rearward inclination of the propeller blades tend to throw any such weeds or lines clear as the wheel rotates.

The construction shown in Figs. 4 to 8 inclusive is substantially that before described, with the exception that the shaft C³ extends through the log G as is usual with motor boats and at its outer end is provided with a propeller wheel E² which may be of any preferred form. Just beyond the stern bearing g, a knife D² is rigidly engaged on the skeg B' and to said stern bearing, and is provided at its upper end with a collar d² which engages around the shaft. This knife is constructed as before described and whatever the pitch of the forward edges of the propeller blades will conform thereto so that as the wheel revolves a shearing cut is insured for any material that may find its way between the same. In this construction also as shown in Fig. 8 the forward edges of the blades D⁴ curve rearwardly and the ends thereof are shaped to permit lines, weeds or any material to slide rearwardly thereover, this of course being facilitated by the action of the wheel and the current caused by the motion of the boat. Of course however, the propeller may assume any suitable form.

The operation is as follows: Whether in working ahead or reversing, weeds, lines or any material that might otherwise wind about the shaft when carried by the propeller forward of the same are immediately engaged with the shearing cut between the forward ends of the blades and the rearwardly directed edges of the knife either above or below the shaft and in consequence such material is quickly severed clearing the shaft therefrom. In the construction shown in Fig. 1 the rotation of the gear casing C on its bearing formed by the gudgeon c and C² serves to steer the boat and no rudder is required, and inasmuch as the gears are entirely inclosed in the casing not only are the same kept free from weeds, but all manner of dirt is excluded therefrom and in consequence the bearings require less attention than heretofore and the life and satisfactory performance of the device is assured.

While I have shown the knife in one construction engaged upon the stern bearing and extending to the skeg, of course, it may be secured under the counter and to the stern post or in any suitable manner to effect the purpose. Howsoever, engaged, however, the edge of the propeller blade swings obliquely across the edge of the knife insuring effective cutting operation with the least expenditure of power.

Obviously there are various ways of embodying my invention and I therefore do not purpose limiting this application for patent otherwise than necessitated by the prior art, as the application of the knives will of course vary with the stern construction, character of the propeller and in some instances with the size of the boat or vessel to which applied.

I claim as my invention:

1. In a device of the class described a gear casing journaled to rotate horizontally at the stern of the boat and adapted to steer said boat, a propeller shaft journaled therein, a propeller thereon, and rearwardly directed knives secured to the casing and coacting with the forward edges of the propeller blades.
2. The combination with a boat of a closed gear casing vertically pivoted at the stern thereof, a driving shaft extending downwardly into the casing, a propeller shaft extending rearwardly therefrom, a propeller thereon, coacting gears within the gear casing for driving the propeller from the driving shaft, and rearwardly directed knives rigidly secured to the casing, the rear edges thereof coacting with the forward edges of the propeller blades, the upper edges of said knives and the propeller inclining upwardly and rearwardly to facilitate the removal by the current of weeds or the like that might otherwise lodge above the knives.
3. In a device of the class described a propeller having the forward edges of its blades curved rearwardly to permit material sliding thereover, actuating mechanism for the propeller, a sectional casing inclosing the same and acting as a rudder and a knife integral with one of the sections of the casing, having an edge curved complementally with the forward edge of the propeller blades and coacting therewith in severing material.
4. In a device of the class set forth a propeller provided with blades curved to permit material to slide rearwardly thereover, knives coacting with the blades and affording a shearing cut on material, a plurality of times for each revolution of the propeller, and a sectional casing acting as a rudder and one of the sections being integral with the knives.
5. In a device of the class described the combination with a propeller provided with blades having rearwardly curved forward

edges, of actuating mechanism for the propeller, a casing inclosing the actuating mechanism to exclude material and acting as the rudder and means secured to the casing adapted to coact with the propeller blades in clearing material therefrom and the propeller shaft.

6. In a device of the class described the combination with the actuating shaft and the propeller shaft of transmitting mechanism operatively connecting the same, a casing covering the same, a propeller on the propeller shaft having blades shaped to assist material sliding thereover and means coacting with the blades a plurality of times during each revolution to sever any material retained by the same or shafts.

7. In a device of the class described a combined casing and knives acting as a rudder and a propeller coacting with the knives to cut refuse.

8. In a device of the class described an integral casing and knives adapted to inclose the transmission mechanism and adapted to guide the device and propelling mechanism adapted to make a shearing cut with said knives.

9. A combined steering, propulsion and clearing device comprising a casing, rearwardly directed knives and a propeller coacting with the knives, said propeller and knives having their adjacent edges curved complementally.

10. A device of the class described comprising propelling mechanism, steering mechanism and means adjustable with the steering mechanism and propelling mechanism

for coacting with the propelling mechanism to sever material.

11. In a device of the class described an adjustable propeller, severing mechanism adjustable to coact therewith and a rudder for steering the device, said propeller and rudder adjustable simultaneously with the severing mechanism.

12. In a device of the class described a propeller adapted to be rotated in a horizontal plane, a knife for coacting with the blades of the propeller and rotatable therewith in a horizontal plane and means for rotating the knife when the propeller rotates and for steering the boat.

13. In a device of the class described a casing and propeller simultaneously rotatable in a horizontal plane, said casing acting as a rudder and rotatable severing means adapted to coact with the propeller in any position thereof.

14. In a device of the class described a rotatable cutting device, a propeller adapted to coact therewith and means for steering the boat.

15. In a device of the class described a simultaneously rotatable propeller, severing knives and rudder, said propeller and knives coacting to cut material.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

WILLIAM L. CASADAY.

Witnesses:

GEO. A. KNOBLOCK,
WM. E. KONZEN.