March 19, 1963 C. LOISEAU 3,081,826

SHIP PROPELLER

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FIG. 1

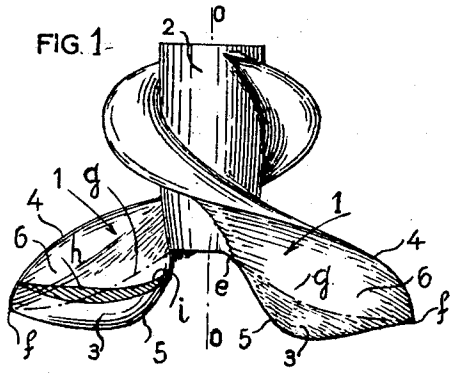
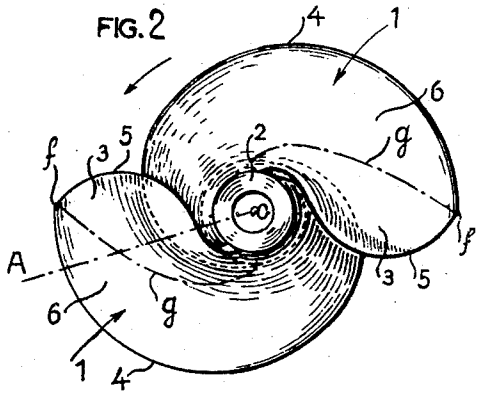


FIG. 2



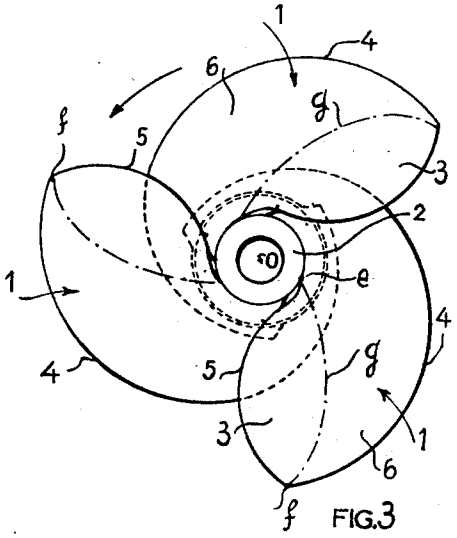


FIG. 3

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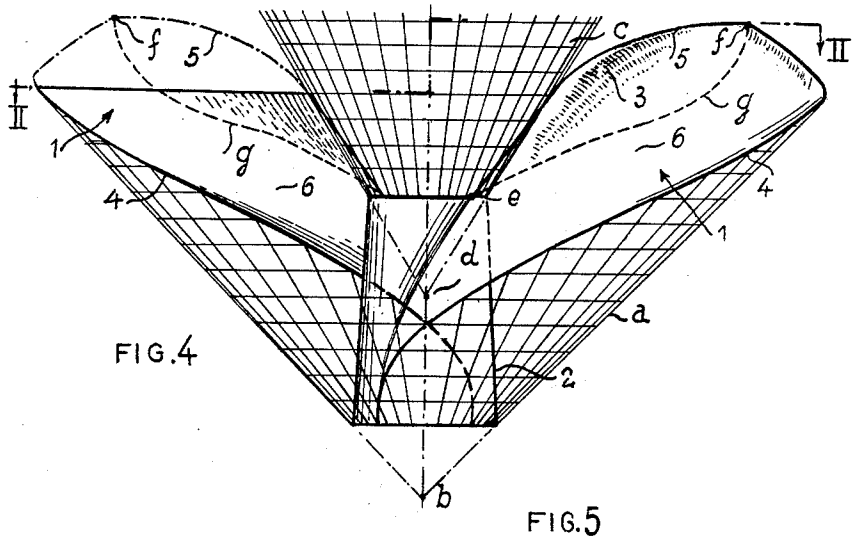
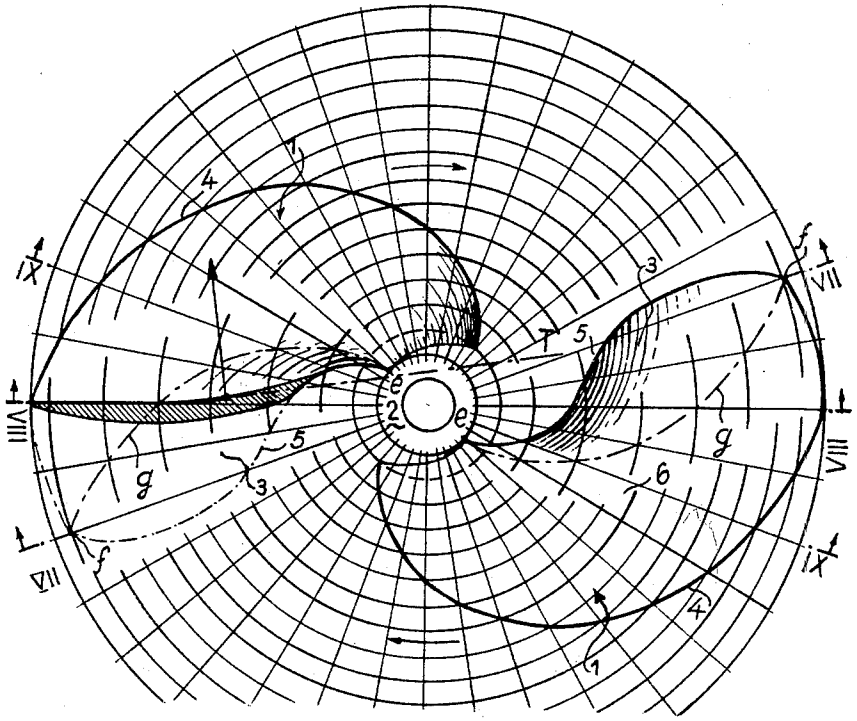


FIG.4

FIG.5



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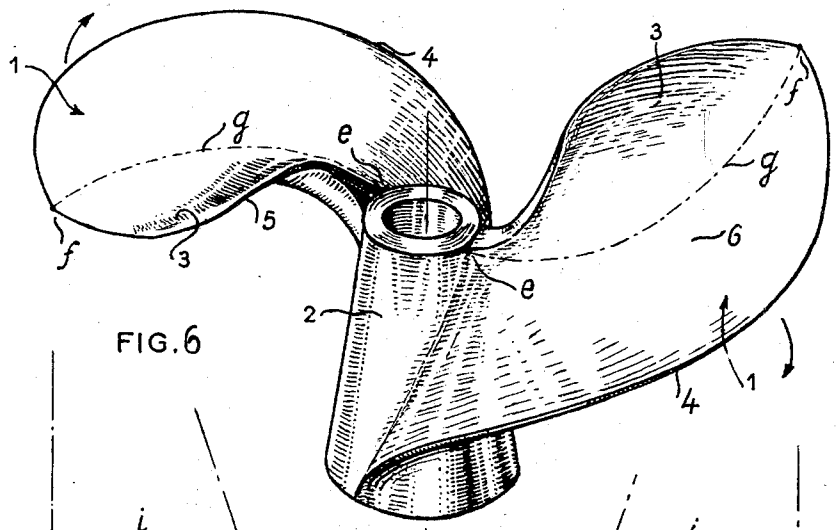


FIG.6

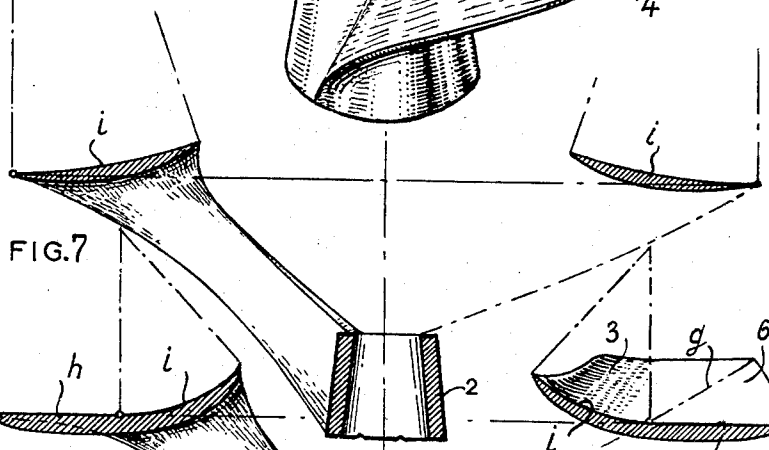


FIG.7

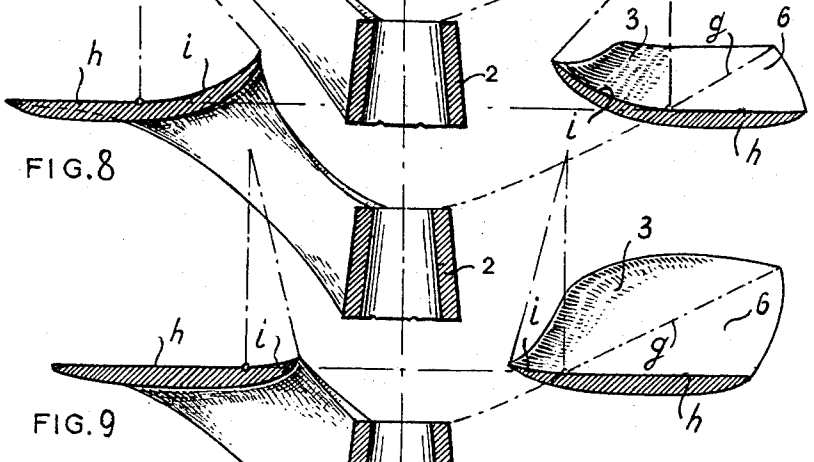


FIG.8

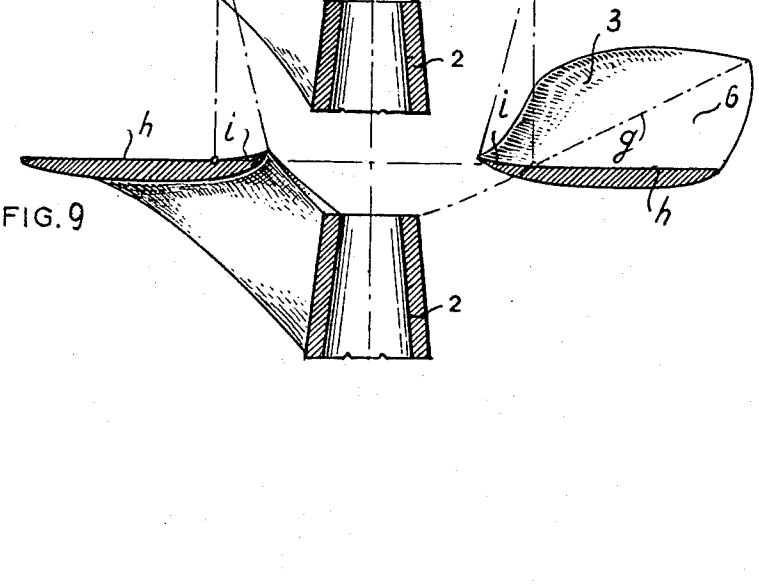


FIG.9

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Patented Mar. 19, 1963

3,081,826

SHIP PROPELLER

Christophe Loiseau, deceased, late of Maine et Loire, France, by Christophe Loiseau, La Seguiniere, Maine et Loire, France, son and heir

Filed Jan. 27, 1960, Ser. No. 4,909
2 Claims. (Cl. 170—159)

This invention relates to improvement in ship propellers, and more particularly to screw propellers of the so-called weedless type having the blades so constructed as to throw off any weeds, driftwood or other floating matter when the propeller is operating forwardly. The present application is a continuation in part of the application Serial No. 593,717 filed in the United States Patent Office June 25, 1956, now abandoned.

In weedless screw propellers of conventional design, the spiral blades are so constructed as to cause the pressure surface of the blades to thrust only rearwardly against the water in which the propeller turns, whereby when any weeds, grass or other obstructions are engaged by the blades, the revolution thereof has the inherent tendency to cast most of such vegetable growth without the radius of revolution, while a part of the vegetable growth is cut into small pieces as it is taken into the spiral with the water picked up by the screw propeller.

The object of the present invention is to provide an improved weedless ship propeller construction whereby the blades are rendered more effective.

The invention broadly stated resides in the formation of the pressure surface of the blades of a weedless propeller in such a manner that while they produce a most efficient rearwardly-acting thrust, they also produce a substantially radial outward thrust impelling water radially outward from the periphery of the propeller to thereby prevent some weed or floating matter from engagement by the leading edges of the blades.

In order that the invention may be clearly understood and readily carried into effect, reference is directed to the accompanying drawings, wherein:

FIG. 1 is a side elevational view of a propeller embodying the invention;

FIG. 2 is a bottom plan view of this propeller;

FIG. 3 is a bottom plan view of a propeller embodying the invention, provided with three blades.

FIG. 4 is a side elevational view of a propeller embodying the invention, the leading edges of the propeller blades being inscribed in a conical surface;

FIG. 5 shows the base circle of the conical surface represented in FIG. 4;

FIG. 6 is a perspective view of the propeller shown in FIG. 4;

FIGS. 7, 8 and 9 are sections taken along the correspondingly numbered lines of FIG. 5.

Referring to the drawings, in which the same reference characters are used throughout the figures for the same or equivalent parts, the propeller comprises a plurality of identical blades 1 extending helically from a hub 2. Each of the blades 1 comprises a leading edge 4 commencing at a point near one longitudinal end of hub 2 and a trailing edge 5 commencing at a point *a* near the other longitudinal end of the hub.

The leading edge 4 of each blade 1 is inscribed in a cone *a* (FIGS. 4 and 5) having its axis in coincidence with the axis O—O of hub 2 and its apex *b* directed toward the ship, and the trailing edge 5 of each blade 1 has an inner length portion starting from point C inscribed in a conus *c* having its apex *d* directed toward the ship and the outer length portion of convex curvature to join the leading edge 4 at the outer end *f* of the blade along a curved line in accordance with usual practice. The exact

outline of the blade is immaterial the present illustration being of a conventional blade extending around the hub and defining a spiral shaped pressure surface area producing the desired rearward thrust upon the water, the propeller being enabled to slip or slide past vegetable growth or floating objects it may strike in the water, as this is well known in the art.

According to the invention, an outwardly curved line indicated at *g* by dot-and-dash lines and extending from point *e* to point *f* of the trailing edge 5 divides the pressure surface area of each blade 1 longitudinally into a trailing surface portion 3 and a leading surface portion 6, the trailing surface portion 3 being concave so that all sections through the blade, in radial planes containing the axis O—O of hub 2 as shown at A in FIG. 2 or as represented in FIGS. 7, 8 and 9, will produce on the leading surface portion 6 the usual straight radial line *h*, and on the concave trailing surface portion 3 a curved line *i* which is in the form of an arc of circle lying in the same radial plane than the straight line *h*, it being understood that the radius of the arc of circle formed by each line *i* increases progressively as the radial section lines such as shown in FIGS. 7 and 9 and passing near the points *e* and *f*, respectively of trailing edge 5 approach the radial section line shown in FIG. 8 and passing through a point of the trailing edge lying substantially at midway between the points *e* and *f*. It will now be apparent that while the leading surface 6 of the propeller blades 1 produces a substantially axial pressure component, the trailing surface 3 produces a substantially radial outward pressure component capable to push off any weeds or floating matter from the periphery of the propeller.

The pressure surface of the blades being shaped as shown and described, and the concave portion of the pressure surface area extending axially preferably beyond the outer end *f* of the blade, makes the propeller particularly well adapted for running in among long grasses and weeds, without liability of the winding of the grass and weeds about the blades.

The foregoing is not to be construed as limiting the invention in respect to the number of blades and to the proportions shown, and in respect to the exact curvature of the line *g* and of the trailing edge 5 shown.

What is claimed is:

1. A ship propeller comprising a hub having a forward and rearward end and a plurality of substantially identical blades extending helically from said hub around the axis thereof, each blade having its leading edge starting from a point near the longitudinal forward end of the hub and its trailing edge starting from a point near the rearward longitudinal end of the hub, each leading edge being inscribed in a cone having its apex directed forward and its axis in coincidence with the axis of the hub and each trailing edge having the inner portion thereof of concave curvature and the outer portion of convex curvature, and the pressure surface of each blade comprising a major portion of spiral conformation generated by a straight line moving longitudinally of said axis of the hub generally normal thereto to provide a substantially axial pressure component, and a transverse concave minor portion defined by said trailing edge and bounded by an outwardly curved line extending on said pressure surface from a point at the inner end of said generating line located substantially at the inner end of said trailing edge to a point located substantially at the outer end thereof, said concave minor portion of the pressure surface being shaped to provide a substantially radial outward pressure component.

2. A ship propeller according to claim 1, in which any section through said major portion and said minor portion of said pressure surface, in a radial plane containing

said axis of the hub, produces a straight radial line on said major portion and a curved line on said minor portion, said curved line having the form of an arc of a circle lying in said radial plane.

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