

W. DEUTSCHER.

PROPELLER.

APPLICATION FILED MAY 11, 1911.

1,018,237.

Patented Feb. 20, 1912.

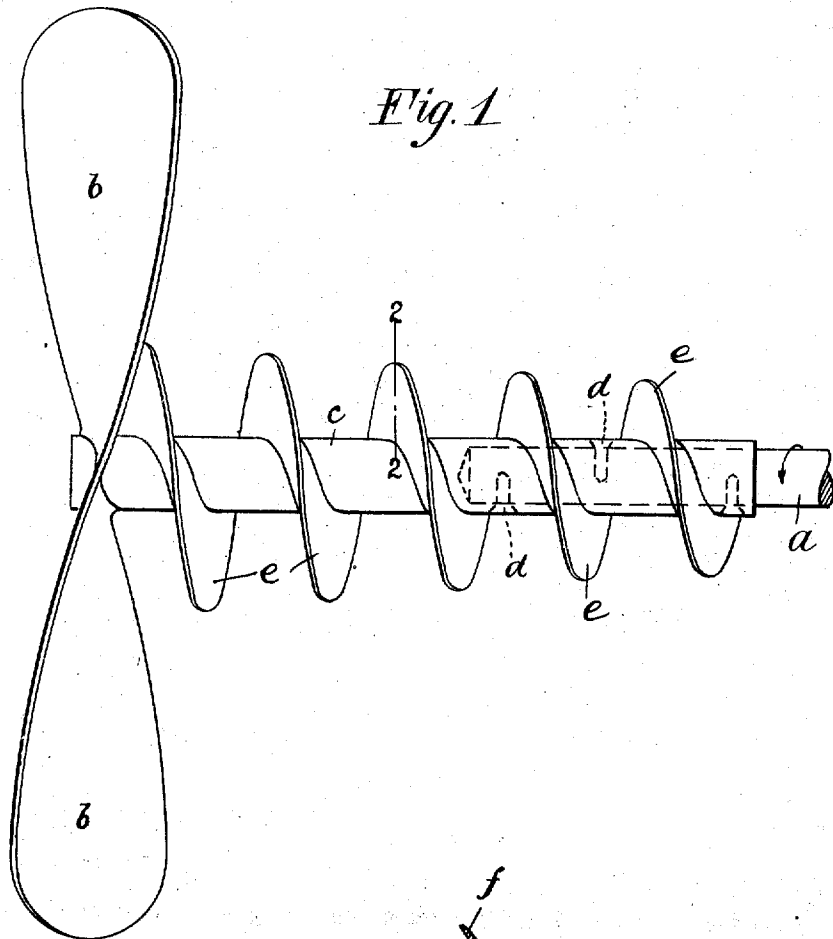


Fig. 2

Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM DEUTSCHER, OF NEW YORK, N. Y.

PROPELLER.

1,018,237.

Specification of Letters Patent.

Patented Feb. 20, 1912.

Application filed May 11, 1911. Serial No. 626,414.

To all whom it may concern:

Be it known that I, WILLIAM DEUTSCHER, a subject of the Emperor of Germany, residing in the borough of Manhattan, city, county, and State of New York, have invented a new and useful Improvement in Propellers, of which the following is a specification.

My invention relates to improvements in propellers to be used in marine propulsion or for driving air ships and comprises means for increasing the efficiency of the propeller and consequently for increasing the speed of the device using the same, without materially increasing the power for driving it.

In the following I have described, in connection with the accompanying drawings, one means of carrying out my invention, the features thereof being more fully pointed out hereinafter in the claims.

In the drawings Figure 1 is a side elevation of one form of propeller constructed according to my invention, and Fig. 2 is a sectional view of a portion of the helical vane along the line 2, 2 of Fig. 1.

Similar letters of reference indicate similar parts throughout the several views.

I shall describe my invention as applied to marine propulsion, although it is obvious that the principles thereof are as well applicable to air propulsion.

It is a well known principle in marine engineering that the net propelling power of a screw propeller is determined by the mass of water thrown rearward multiplied into the square of the velocity with which it is thrown and this is one of the principles which I have applied in my new invention.

According to the present practice the propeller when it has reached a certain velocity has reached its highest efficiency and above this point, increase in velocity is useless, as each propeller blade in its very rapid successive action to the preceding one strikes almost the same spot as the preceding blade, hence striking in the vortex and almost in a vacuum and without obtaining the greatest efficiency. In other words, the propeller blades at a certain limit of high speed strike in so-called "dead water", the striking in which has little or no effect in increasing the speed of the device driven. One reason for this is that the propeller blades do not strike in water but in the vortex or air space created by the preceding blade. By

my invention I obviate this disadvantage by providing means for pushing a constant supply of water against or toward the propeller blades which always have live water upon which to act. The propeller blades thus act on the water moving rearwardly or pushed against it from the vane hereinafter described and the greater the velocity the greater the mass pushed rearwardly to the blades and hence the greater the speed. A propeller may therefore be driven at higher speed than heretofore with increase of efficiency instead of without advantage.

a indicates the propeller shaft which is driven by a suitable engine (not shown).

b, b indicate propeller blades of the usual type secured to an elongated hub *c*. The hub *c* is secured to the propeller shaft *a* by any suitable means, such as by screws *d*.

e indicates a helical vane or blade on the hub *c*, the vane being shown as increasing in diameter from front to rear and terminating immediately adjacent the propeller blades *b, b*. The turns of the helical vane or blade are shown as being substantially equidistant from each other. I prefer that the vane shall be so constructed although the diametrical dimensions and shape of the vane may be varied without departing from the spirit of my invention. As shown in Fig. 2 the vane is inclined rearwardly at its tip *f* and where it joins the hub *c* it is rounded so as to form a smooth round non-resistant joint therewith.

The rotation of my new propeller in the direction of the arrow, Fig. 1, will push the water astern to the propeller blades, the mass of water so pushed being determined by the speed of rotation of the propeller shaft. By increasing the diameter of the elongated vane from front to rear, the front part of the vane presented less resistance to the water facilitating the subjection of the water to the action of the vane, while at the same time the rotation of the propeller as a whole has the effect of forcing the vehicle to which it is attached, forward, each portion of the elongated vane assisting in this forward propulsion by pushing the water rearwardly, the blades *b, b* receiving the water from the vane and throwing it rearwardly. I have shown only two blades *b, b* although, of course, it is obvious that the number of blades is immaterial. I have also shown the vane as mounted upon a hub although it is obvious that it might as well

be mounted directly on the shaft. The construction shown may be as well adapted to twin screws as to a single screw, as is obvious.

5 I do not desire to restrict myself to the details shown further than the scope of the appended claims demand.

What I claim and desire to secure by Letters Patent is:

10 1. The combination of a shaft, means for driving the same, propeller blades mounted on said shaft and a continuous helical vane surrounding said shaft comprising a plurality of complete turns and terminating in
15 one of said propeller blades.

2. The combination of a shaft, means for driving the same, an elongated hub mounted on said shaft, propeller blades mounted on
20 said hub and a continuous helical vane mounted on said hub comprising a plurality of complete turns and terminating in one of said propeller blades.

3. The combination of a shaft, means for driving the same, propeller blades mounted
25 on said shaft and a continuous helical vane surrounding said shaft comprising a plurality of complete turns and terminating in

one of said propeller blades, the vane increasing in diameter from front to rear.

4. The combination of a shaft, means for
30 driving the same, propeller blades mounted on said shaft and a continuous helical vane surrounding said shaft comprising a plurality of complete turns and terminating in
35 one of said propeller blades, the turns of the helical vane being substantially equidistant from each other.

5. The combination of a shaft, means for driving the same, propeller blades mounted
40 on said shaft and a continuous helical vane surrounding said shaft comprising a plurality of complete turns and terminating in one of said propeller blades, said vane increasing in diameter from front to rear and
45 the turns of the helix being substantially equidistant from each other.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILLIAM DEUTSCHER.

Witnesses:

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K. G. LEARD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."