April 10, 1934. S. H. WASHBURNE 1,954,437

PROPELLER

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Fig. 1.

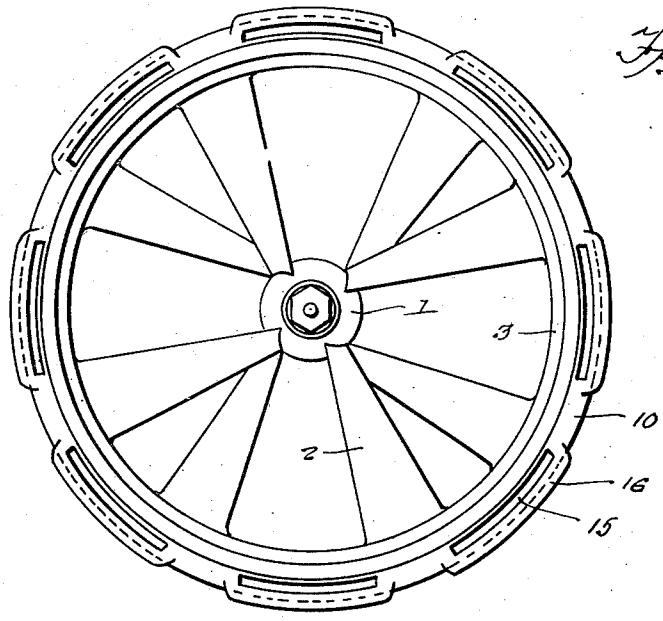
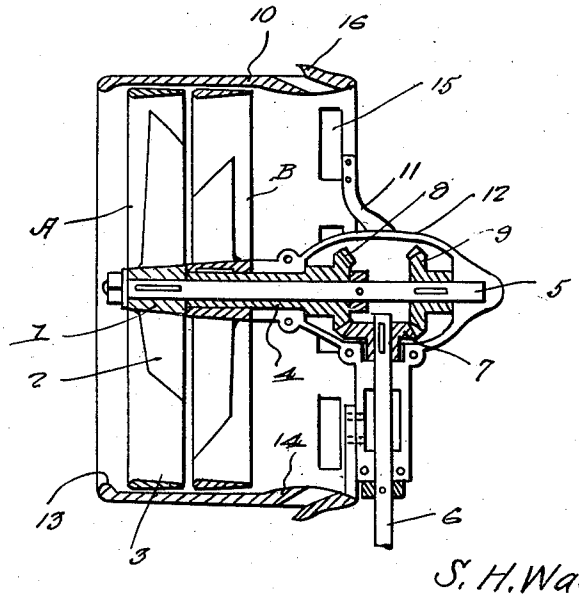



Fig. 2.




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Fig. 3.

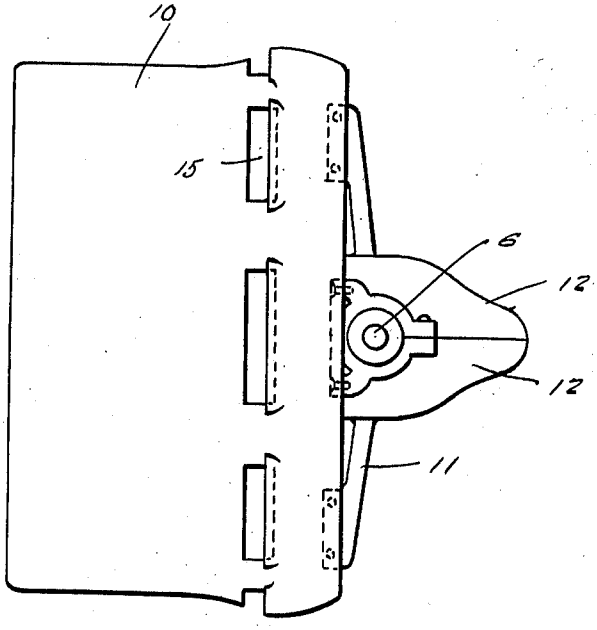



Fig. 4.

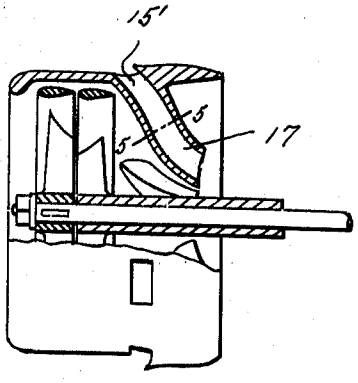
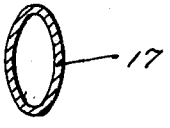



Fig. 5.




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# UNITED STATES PATENT OFFICE

1,954,437

## PROPELLER

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Application February 28, 1933, Serial No. 658,983

3 Claims. (Cl. 170—168)

This invention relates to improved propellers for use with any kind of fluid and for transporting the fluid or being actuated by the moving fluid itself.

The general object of the invention is to provide propelle means which will produce more pronounced agitation and grip of the propellers into the media or fluid than propelling devices as now constructed and which will compound the suction and the delivery pressure, and can be made of smaller dimensions and will have greater strength and better efficiency than propellers as now constructed.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a front view of the invention.

Fig. 2 is a sectional view thereof.

Fig. 3 is an elevation.

Fig. 4 is a view partly in section showing a modification.

Fig. 5 is a section on line 5—5 of Fig. 4.

In these drawings, a pair of propellers is shown but it is to be understood that any number of these propellers can be used.

As shown in the drawings, I provide a pair of propellers A and B, each of which consists of a hub 1, blades 2 and a ring 3 to which the outer ends of the blades are connected. A hollow shaft 4 is connected to the hub of the propeller B and a shaft 5 is connected to the hub of the propeller A, the shaft 5 passing through the hollow shaft 4 and the two propellers are to be rotated in opposite direction. Fig. 2 shows a drive shaft 6 having a gear 7 thereon which meshes with a gear 8 on the hollow shaft 4 and a gear 9 on the shaft 5 so that the two propellers are driven in opposite directions when the shaft 6 is rotated, but it is to be understood that the shafts can be driven in any suitable manner.

A cylinder 10 surrounds the two propellers and is supported by the brackets 11 from gearing housing 12. This cylinder has its front end slightly curving inwardly as shown at 13 and its rear part slightly contracted as shown at 14 so that the rear part of the cylinder is of less internal diameter than that part which encloses the two propellers. The rear part of the cylinder is formed with the openings 15 which slope inwardly and rearwardly and a scoop 16 covers the rear part of each opening.

The blades or wings of the propellers are positioned to force the media of fluid from front to rear and the rotation of the two propellers in two directions prevents the media or fluid from performing a whirling motion around the axis of the device and the rings 3 prevent it from moving centrally outwardly which is the tendency of the media especially when adjoining the terminals of the propellers. Cylinder 10 acts to guide the fluid to the rear in a compact body and the smaller diameter of the cylinder at the rear produces an internal pressure against the walls thereof which increases the push at the tail or rear end of the device. The fluid rushing through the openings 15 will unite with the main stream of fluid passing through the device and this passage of the fluid through the openings is induced by the power of suction. The device can be used with either gas, air, or a liquid or a powdery substance.

In the modification shown in Figs. 4 and 5, inwardly and rearwardly extending spout-like members 17 are connected to the openings 15' and these members are preferably of the shape shown in Fig. 5. These members will carry the fluid from the outside towards the central part of the device and act to vivify the motion of the fluid which is nearly always deficient at this point.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts provided that such changes fall within the scope of the appended claims.

Having thus described my invention, what I claim as new is:—

1. A device of the class described comprising a pair of propellers each consisting of a hub, a number of blades and a ring connected to the outer ends of the blades, means for rotating the propellers in opposite directions, a cylinder surrounding the propellers, said cylinder having its rear portion of smaller internal diameter than that portion which surrounds the propellers, and said rear portion having inwardly and rearwardly extending openings therein, and scoops extending over the exterior rear portions of said openings.

2. A device of the class described comprising

a pair of propellers consisting of a hub, a number of blades and a ring attached to the outer ends of the blades, a shaft connected to the hub of the front propeller, a hollow shaft thru which the first shaft passes, said hollow shaft being connected to the hub of the rear propeller, means for driving the shafts in opposite directions, a cylinder having an intermediate portion surrounding the propellers with its rear part of smaller internal diameter than that part which surrounds the propellers, said rear part of the cylinder having rearwardly and inwardly extending openings therein, and the front end of the cylinder being slightly curved inwardly.

3. A device of the class described comprising a stationary cylinder having its ends open and having its rear portion of smaller internal diameter than its front portion, said rear portion having inwardly and rearwardly extending openings therein, a number of propellers located in the front portion and means for rotating said propellers in opposite directions.

STEPHEN HOWARD WASHBURNE.