

M. DONATH.
 SCREW BLADE FOR IMPELLERS.
 APPLICATION FILED MAY 20, 1913.

1,088,883.

Patented Mar. 3, 1914.

Fig. 1

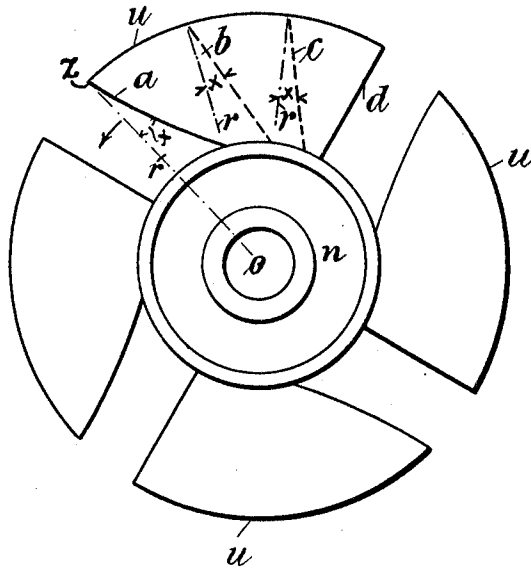


Fig. 2

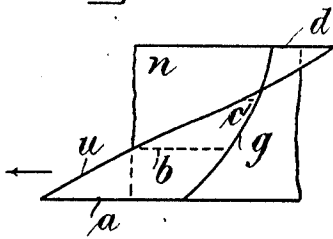
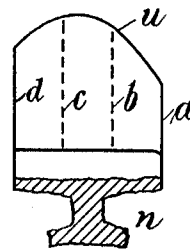


Fig. 3



Witnesses:
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UNITED STATES PATENT OFFICE.

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SCREW-BLADE FOR IMPELLERS.

1,088,883.

Specification of Letters Patent.

Patented Mar. 3, 1914.

Application filed May 20, 1913. Serial No. 768,884.

To all whom it may concern:

Be it known that I, MAX DONATH, a subject of the King of Saxony, residing at Dresden, Germany, have invented certain new and useful Improvements in Screw-Blades for Impellers, of which the following is a specification.

My invention relates to impellers for imparting motion to fluids and the like, and provides a device of this character which by reason of its peculiar formation, is particularly efficient in operation.

In general, it may be stated that the blade formation of my impeller is produced by the helical motion of a line in such a manner that its form position and pitch are continually changing. In this manner there is produced an impeller having the edges of its blades both at the inlet and the outlet lying in planes vertical to the axis, and furthermore, the arc inclosed by the width of the blade is largest at the periphery of the impeller wheel and becomes continuously smaller as it approaches the hub.

Referring to the drawing annexed hereto and forming a part of this specification: Figure 1 is a plan view of an impeller wheel of four blades, and showing in dotted lines the angular relation between a radius of the impeller wheel and the generatrix of the blade. Fig. 2 is an end elevational view looking directly at the edge of the blade. Fig. 3 is a side elevation of one blade.

In the impeller wheel shown in the drawing, n is a bored boss adapted to receive therein a shaft; this boss is located at the center of the impeller wheel and the axis o of the bore forms the axis of the impeller. The impeller wheel may be made up of any suitable number of blades, the impeller shown and described herein consisting of four blades u .

In constructing an impeller according to my invention, the diameter of the wheel is determined upon and a radius r drawn.

With the point z where the radius meets the circumference of the wheel, as an apex a line is drawn at an angle to said radius; this line is the generatrix, and the angle α thus formed must lie at the inlet of the blade when the blade is rotated in the direction indicated by the arrows in Figs. 1 and 2. However, the line must be drawn so that the angle α is located in a direction opposite to the direction of rotation of the impeller. Let A represent the generatrix and b, c and d represent the generatrix in four different positions. That in order to produce the surface of the blade, the generatrix line a is moved in a helical path and the angle α is at the same time gradually diminished. Thus the angle α varies during the generation of the surface from its maximum value to its minimum value.

Slight modifications may be resorted to in carrying my invention into practice, without departing from the spirit thereof.

What I claim is:—

1. An impeller wheel having one or more blades, each blade having the form described by a generatrix lying at an angle to the radius of the wheel, and moving in a helical path with continuously changing pitch and position, said angle varying during the generation of the surface from its maximum value to its minimum value.

2. An impeller wheel having one or more blades, each blade having the form described by a generatrix lying at an angle to the radius of the wheel, and moving in a helical path with continually changing pitch and position, said angle varying during the generation of the surface from its maximum value to zero.

In testimony whereof I affix my signature in presence of two witnesses.

MAX DONATH.

Witnesses:

OTTO BLAURMEISTER,
KARL STEYER.