H. GUYER.

CENTRIFUGAL PUMP AND COMPRESSOR OR THE LIKE.

APPLICATION FILED JAN. 29, 1913.

1,083,739. Patented Jan. 6, 1914.

FIG. 1.

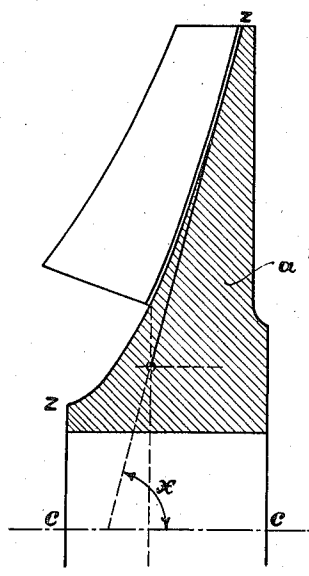
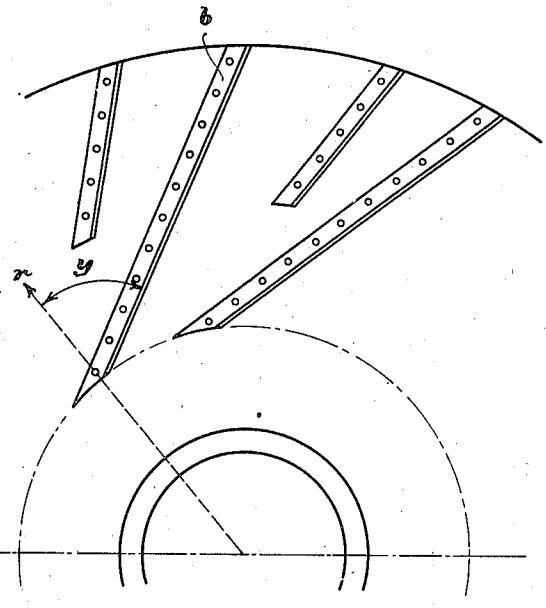


FIG. 2.



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UNITED STATES PATENT OFFICE.

HANS GUYER, OF ZURICH, SWITZERLAND.

CENTRIFUGAL PUMP AND COMPRESSOR OR THE LIKE.

1,083,739. Specification of Letters Patent. Patented Jan. 6, 1914.

Application filed January 29, 1913. Serial No. 744,846.

To all whom it may concern:

Be it known that I, HANS GUYER, citizen of the Swiss Republic, residing at Hardturmstrasse 19, Zurich, in the Swiss Republic, have invented certain new and useful Improvements in Centrifugal Pumps and Compressors or the like, of which the following is a specification.

This invention consists in constructing at least one side of the rotor in centrifugal pumps or compressors in the form of a hyperboloid and securing to that side straight blades.

As is well known a hyperboloid is produced by the rotation of a straight line about an axis without changing its position with regard to that axis. By so choosing this position as to cause it to coincide with the position of the blades to be secured to the rotor the great advantage is obtained of enabling straight blades to be used which are cheaper and easier to manufacture particularly on a large scale than curved blades and which can be secured to the disk in a simpler and safer manner without necessitating the time-wasting operation involved in the usual setting and fitting. Straight blades have already been used, for instance, in compressors, but in this case the faces of the rotor destined to receive the blades had to be straight. Curved rotor faces, however, have over straight faces the advantage of forming a better guide for the air and of enabling a more favorable shape to be given to the rotor to counteract strains, and more particularly to avoid the bending strains which are liable to occur in rotors with one-sided admission.

The drawing illustrates by way of example the rotor of a centrifugal compressor with one-sided admission.

Figure 1 is a cross section, and Fig. 2 a front view of the rotor.

According to the invention straight blades of an angular or T-shaped cross section are to be riveted to the rotor *a*. In cross section, as shown in Fig. 1, the blades should form an angle x with the axis $c\ c$, while viewed in lateral elevation, as shown in Fig. 2, they should form the angle y with the radius r so that in reality these blades are entirely oblique with regard to the axis $c\ c$. In precise co-incidence with this direction a straight line should now be rotated about the axis whereby the front profile of the rotor is determined and which profile therefore assumes the form of a hyperboloid. Precisely registering with the position and direction of the generatrix, the blades *b* to be riveted to the rotor are then put in place. These blades need not all have the same length, although as regards the axis they must all have the same direction. The rear face of the rotor may likewise receive the form of a hyperboloid or that of any other rotary face or even be straight, if desired.

In the event of the rotor being subject to admission on both sides, both faces are shaped as hyperboloids, so as to enable straight blades to be secured to both faces. The turner will of course be provided with a gage corresponding to the sectional face $z\ z$ of Fig. 1 of the hyperboloid and with regard to the axis presenting a convex curve.

What I claim and desire to secure by Letters Patent of the United States is:—

1. A rotor for centrifugal pumps, compressors or the like, having the lateral face which is adapted to receive the blades constructed in the form of a hyperboloid.

2. A rotor for centrifugal pumps, comprising in combination, a disk having a lateral face constructed in the form of a hyperboloid, and straight blades secured to said face on lines coincident with the generatrix of the hyperboloid at the section of the surface selected.

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

HANS GUYER.

Witnesses:

CARL GUBLER,

AUGUST RIEGG.