(No Model.)

E. SEGER.

STEAM TURBINE WHEEL.

No. 530,802. Patented Dec. 11, 1894.

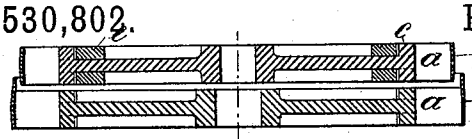


Fig. 1.

Fig. 2.

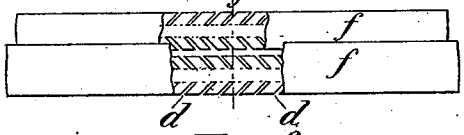


Fig. 3.

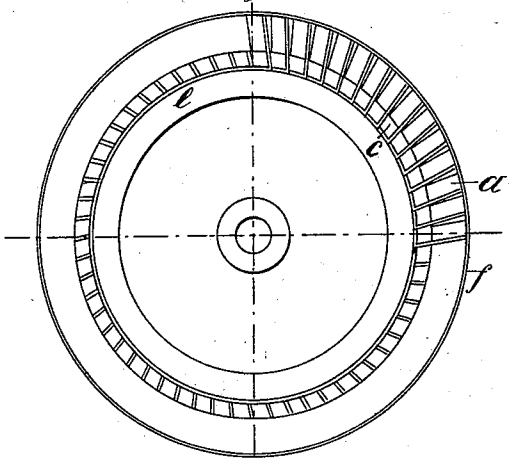


Fig. 4.

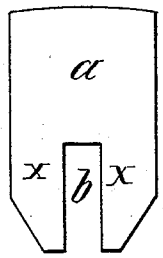


Fig. 7.

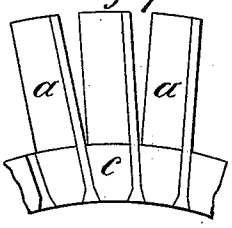


Fig. 5.

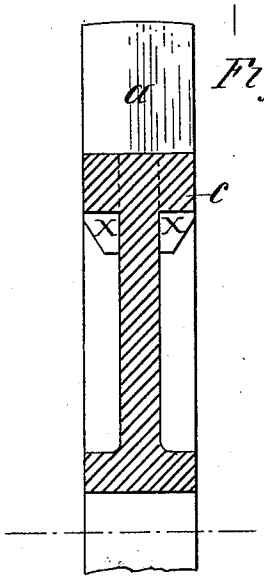


Fig. 6.

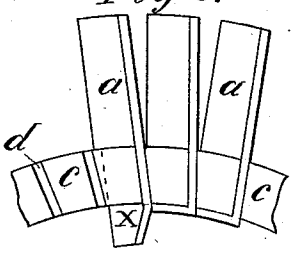
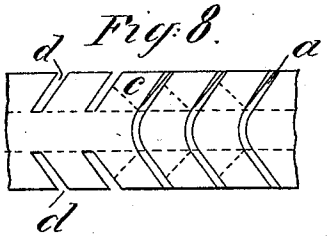


Fig. 8.



Witnesses
Herbert Bradley.
J. M. Pond.

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by
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his Attorneys.

UNITED STATES PATENT OFFICE.

EBERHARD SEGER, OF STOCKHOLM, SWEDEN.

STEAM TURBINE WHEEL.

SPECIFICATION forming part of Letters Patent No. 530,802, dated December 11, 1894.

Application filed August 17, 1894. Serial No. 520,623. (No model.) Patented in Sweden November 10, 1893, No. 5,132; in France March 5, 1894, No. 236,668; in England March 5, 1894, No. 4,611, and in Austria-Hungary March 21, 1894, No. 44 and No. 579.

To all whom it may concern:

Be it known that I, EBERHARD SEGER, engineer, a subject of the King of Sweden and Norway, and a resident of Stockholm, Sweden, have invented an Improved Steam Turbine Wheel, of which the following is a specification, and for which Patents have been obtained in the following countries: Sweden, No. 5,132, dated November 10, 1893; France, No. 236,668, dated March 5, 1894; England, No. 4,611, dated March 5, 1894, and Austria-Hungary, No. 44 and No. 579, dated March 21, 1894.

This invention has for its object to construct steam-turbine wheels in such a manner, that they become simple, cheap and light.

In the accompanying drawings, Figure 1 is a vertical section and Fig. 2 a front elevation, with the wheel-ring partly removed, of two turbine-wheels arranged according to my invention and placed one above the other. Fig. 3 is a plan view of such a wheel. Fig. 4 illustrates an enlarged form of the paddle-blanks. Fig. 5 is a sectional view enlarged of a part of my improved turbine-wheel with an inserted paddle, but without the outer-wheel-ring. Fig. 6 is a side elevation enlarged of a part of such a turbine-wheel with paddles, illustrating two different steps of the operation of fastening the latter. Fig. 7 is a part of such a turbine-wheel with the paddles fixed by riveting, and Fig. 8 is the outside of a part of the wheel-body with notches for the paddles and with some paddles inserted.

The paddle-blanks *a*, which may be punched out of thin sheet-iron plates or of plates of some similar material, ought best to have a rectangular form (Fig. 4), with a notch *b* in its undermost side. The lower corners of this rectangle may be cut off (as is illustrated by Fig. 4), or they may be formed in some other way in such a manner, that they do not overlap the edge of the wheel-body when the undermost part of the paddle-blanks is bent as will be further described below. The body of the wheel has a T-shaped section (Fig. 5) and at the two edges of the wheel-ring *c* there are a number of notches *d* (Figs. 2 and 8), of which those at the one edge are converging toward those of the other edge, without meeting however. Into the said notches the flaps *x* on both sides of the notch *b* are inserted (Figs. 5 and 8), the paddle-blank being previously somewhat curved (Fig. 8).

If the turbine is a compound-turbine, consisting of two turbine-wheels, the one above the other (as illustrated in Figs. 1 and 2), the notches *d* of the upper wheel must have a sharper convergence than those of the lower wheel. After the insertion of the paddle blanks in the notches, the ends of the flaps *x* projecting beyond the inside of the wheel-ring are bent against the inside of that ring (Fig. 6), thus causing the paddles to be securely held in their positions even at the greatest velocity of the wheels. In order to strengthen still further this fastening some rings *e* may be placed inside of the bent paddle-ends (Figs. 1 and 3) and moreover also a ring *f* may be shrunk on around the outer-ends of the fixed paddles (Figs. 1 and 3), care being taken, to give the paddle-ends such a form—convex or concave—that the wheel-ring at the shrinking-on obtains a corresponding form and thus is more securely held in position. Instead of bending over the inner ends of the paddle-blanks (Fig. 6), they may also be fastened to the wheel-body by riveting their ends as illustrated in Fig. 7.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In steam-turbines, the combination of a wheel-body, the ring (*c*) of which at its both edges has notches (*d*) cut out obliquely and converging toward each other, and of curved paddle-blanks (*a*), which at their lower ends have a notch (*b*) and flaps (*x*), adapted to be inserted into the notches in the ring of the wheel.

2. In a turbine wheel, the combination with the wheel body and its ring having notches converging as described, of the paddles having ends projecting inside the wheel ring, and bent against its inside, and rings placed at the inside of these ends for the purpose of firmly holding the paddles.

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

EBERHARD SEGER.

Witnesses:
H. TELANDER,
T. RISBERG.