No. 846,896. PATENTED MAR. 12, 1907.

N. BECKER.

TURBINE.

APPLICATION FILED JULY 30, 1906.

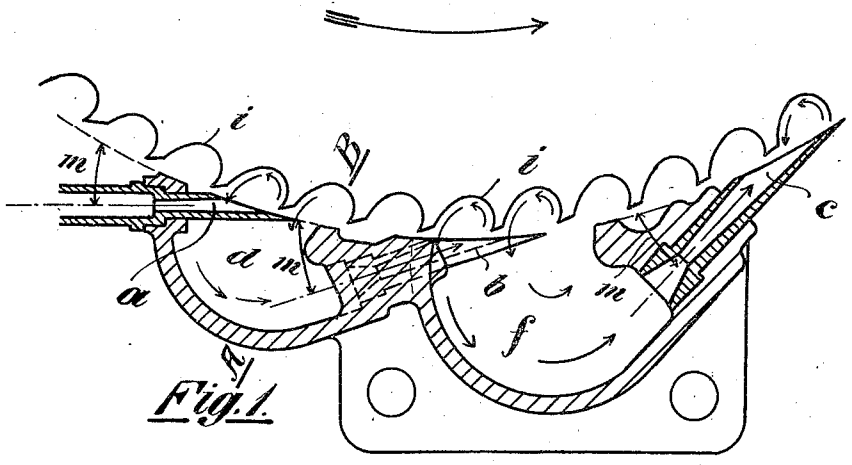


Fig. 1.

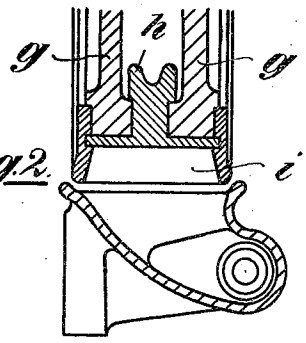
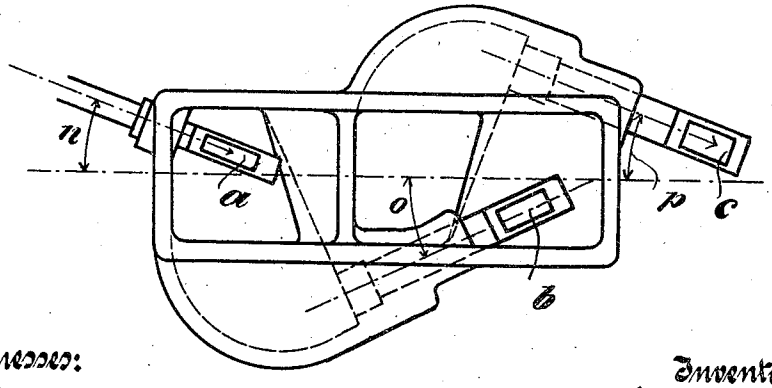


Fig. 2. section through A-B

Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

NICOLAUS BECKER, OF FRANKFORT-ON-THE-MAIN, GERMANY.

TURBINE.

No. 846,896. Specification of Letters Patent. Patented March 12, 1907.

Application filed July 30, 1906. Serial No. 328,400.

To all whom it may concern:

Be it known that I, NICOLAUS BECKER, a citizen of the German Empire, residing at Frankfort-on-the-Main, Germany, Hausahaus, Stiftstrasse 9–17, have invented new and useful Improvements in Turbines, of which the following is a specification.

My invention relates to improvements in radially-impelled elastic-fluid turbines where the steam or other elastic fluid acts upon vaulted buckets in the rim of a turbine-wheel; and its object is to provide for the reverberation and repeated action of the jet of motive fluid emitted from a nozzle.

I attain my object by the arrangement of nozzles and reverberatory chambers illustrated on the drawing herewith, in which—

Figure 1 is a longitudinal section through a fresh-steam nozzle with vaulted chambers and nozzles for a second and third action upon the wheel, showing at the same time the outline of part of the periphery of a wheel provided with vaulted buckets. Fig. 2 is a transverse section on the line A B of Fig. 1 through the rim of a wheel with a bucket and close to it one of the reverberatory chambers referred to. Fig. 3 is a plan view of the arrangement shown in Fig. 1, illustrating the relative position of the chambers and nozzles to the wheel.

On the said drawing, *a* is a nozzle through which the fresh steam coming from a suitable supply-pipe is emitted upon the wheel. It is pointed at the vaulted buckets in a direction laterally oblique to the wheel's turning plane. Adjoining to the said nozzle is a vaulted chamber *d*, extending in an outward curve over to the other side of the wheel and being provided with another nozzle *b*, also obliquely pointed at the wheel-rim, but from the said other side. A second chamber *f* extends in an outward-curved line over to the first-mentioned side and is provided with a third nozzle *c*, pointing against the rim of the wheel from the same side as the nozzle *a* and also at a lateral angle. There may be more nozzles and reverberatory chambers, according to the force of the steam or other motive fluid.

The motive fluid after having left the nozzle *a* enters one of the buckets *i* and being blown into the same in an oblique line assumes a helical course, passing along the wall of the bucket and accordingly reversing its direction. It then enters the chamber *d*, proceeds along the wall of the latter into the nozzle *b*, and is therethrough blown against the buckets *i*, this course being repeated through the chamber *f* and the nozzle *c* or more corresponding chambers and nozzles, if any, until the jet is at a desired minimum tension.

The tangential angle at which each of the nozzles points at the rim is the same for all, while the lateral angle varies to correspond with the force and speed of the jet. So does the size of the chambers, which increases with the reduced force of the same.

What I claim as my invention is—

The combination of an elastic-fluid-turbine wheel with vaulted buckets on its rim, nozzles pointed at the said rim obliquely to the turning plane of the wheel, vaulted chambers extending from one side of the wheel over to the other adapted to receive and reverberate the elastic fluid recoiled from the vaulted buckets and nozzles extending from the said chambers and pointing alternately from either side of the wheel obliquely at the said buckets, the tangential angle at which the several nozzles point against the rim being alike for all while the angle of the oblique lateral direction varies, substantially as described.

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

NICOLAUS BECKER.

Witnesses:

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