

H. LENTZ.
TURBINE.

APPLICATION FILED JAN. 27, 1909.

921,647.

Patented May 11, 1909.

Fig. 1

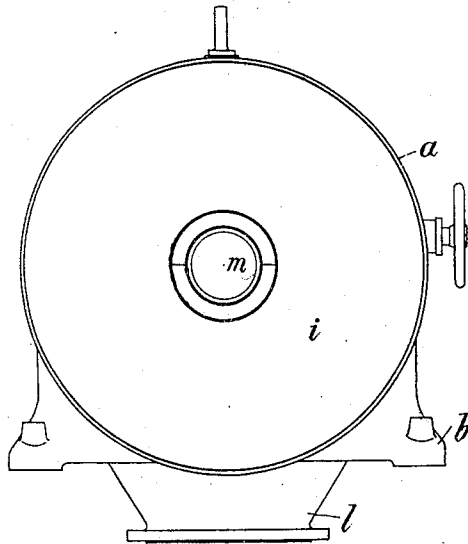
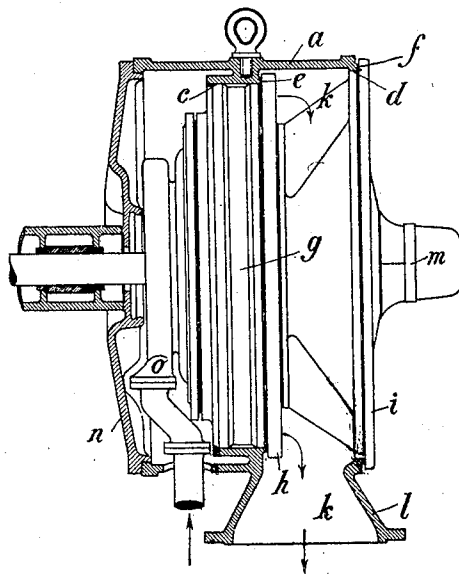


Fig. 2



WITNESSES;
W. H. Berrigan.
Alfred P. Anderson.

INVENTOR,
HUGO LENTZ,
by *Ivan Sedemmel*
Attorney.

UNITED STATES PATENT OFFICE.

HUGO LENTZ, OF HALENSEE, NEAR BERLIN, GERMANY.

TURBINE.

No. 921,647.

Specification of Letters Patent.

Patented May 11, 1909.

Application filed January 27, 1909. Serial No. 474,508.

To all whom it may concern:

Be it known that I, HUGO LENTZ, a subject of the German Emperor, and residing at Halensee, near Berlin, Germany, have invented certain new and useful Improvements in Turbines, of which the following is a specification.

The present invention relates to steam and gas turbines and a primary object is to provide such turbines having additional external casings.

In the case of steam and gas turbines known heretofore it has been generally customary to fasten the turbine-housing to a bed-plate or to secure it in other suitable manner to the foundation and to build the guide blades and rotor into the same. In the case of high pressure turbines it is usual in addition to attach the high pressure guiding devices to the turbine-housing after the remaining parts have been assembled. In contradistinction to this known construction the subject-matter of the present invention is a turbine which is built in an ordinary housing with all the guiding and rotary devices, without the housing being constructed directly on the bed-plate. On the contrary, the housing is so constructed that it can be inserted into a special external shell which is connected firmly with the bed-plate. After the external shell has then been closed by covers at both sides of the inclosed turbine which is carried by bearings in said covers, it is possible on the one hand to insulate the turbine in its entirety efficiently with the aid of the inclosed stationary air, and on the other hand to keep the turbine bearings so far from the parts supplying steam that they are maintained at a suitably cool temperature. Further, the construction is such that the live steam channel and the steam supply pipe are situated in the one insulating chamber in the exterior shell, so that just here the losses due to radiation are effectively checked. At the two sides of the exhaust conduit an exhaust steam chamber is also made in the external shell by suitable ribs and well-fitting faces, so that the exhaust-pipe socket is not provided on the turbine-housing proper but on the external shell. This mode of construction has the additional advantage that the condenser pipe which is relatively large in the case of turbines is screwed to the stationary exterior shell and therefore in case of need the turbine can be dismembered without the condenser pipe being detached.

Lastly, the employment of a special external shell around the turbine-housing proper enables the completely assembled turbine to be built and carried centrally conveniently and admits of the turbine proper expanding without hindrance.

In order that the invention may be clearly understood reference will be made to the accompanying drawing in which one embodiment is represented by way of example, and in which:

Figure 1 is a front elevation, and Fig. 2 a longitudinal section of an exterior shell inclosing a turbine.

Referring to the drawing, *a* is the cylindrical external shell adapted to be attached by means of its two brackets or legs *b* to a bed-plate or other foundation. The shell has two cylindrical guides *c* and *d* having well-fitting faces or ribs *e* and *f*, and the assembled turbine *g* is placed into this external shell. The well-fitting flanges *h* and *i* provided at the turbine at the two sides of the exhaust conduit enable a tight joint to be made conveniently, so that the exhaust chamber *k* is formed in the shell and the exhaust-pipe socket *l* can be arranged on the stationary shell. The cover *i* also serves as support for the bearing *m* of the rotor of the turbine, whereas the cover *n* at the other side of the shell can support the other bearing on the high pressure side. Steam is supplied to the turbine through the socket *o*.

What I claim as my invention and desire to secure by Letters Patent is:

1. The combination with an assembled turbine, of a shell having internal guides to receive said turbine when shoved into said shell axially.
2. The combination with a shell having internal guides and ribs, of an assembled turbine adapted to be shoved axially into said shell and to fit in said guides, and provided with flanges to make tight joints with said ribs.
3. The combination with a shell having internal cylindrical guides and ribs, of an assembled turbine having a cylindrical housing fitting into said guides and provided with circumferential flanges fitting against said ribs.
4. The combination, with an assembled turbine, of a live steam pipe connected therewith, and an exterior shell having an exhaust steam outlet and an opening for said live steam pipe, said shell inclosing said turbine

and fitting the same steam-tight at both sides of said outlet, for the purpose specified.

5 The combination, with an assembled turbine, of a live steam pipe connected therewith, an exterior shell having an exhaust steam outlet and an opening for said live steam pipe, said shell inclosing said turbine and fitting the same steam-tight at both sides of said outlet, and detachable covers for said
10 shell, the rotor of said turbine being carried

revolvably by said covers, as set forth, for the purpose specified.

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

HUGO LENTZ.

Witnesses:

C. FREMY,
GUSTAV BÄHR.