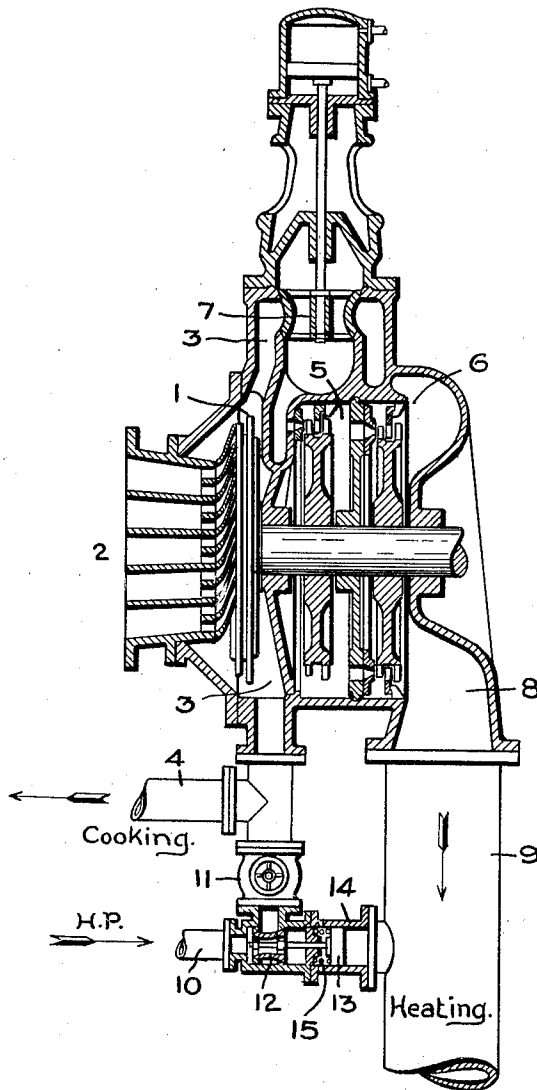


H. TREITEL.
TAPPED TURBINE.
APPLICATION FILED OCT. 1, 1912.

1,063,622.

Patented June 3, 1913.



Witnesses:

Marcus L. Byng.
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Att'y

UNITED STATES PATENT OFFICE.

HEINRICH TREITEL, OF CHARLOTTENBURG, GERMANY, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

TAPPED TURBINE.

1,063,622.

Specification of Letters Patent.

Patented June 3, 1913.

Application filed October 1, 1912. Serial No. 723,320.

To all whom it may concern:

Be it known that I, HEINRICH TREITEL, a subject of the King of Prussia, residing at Charlottenburg, Germany, have invented certain new and useful Improvements in Supplementing the Steam Supplied by Tapped Turbines, of which the following is a specification.

This invention relates to what are sometimes termed "tapped" turbines, or in other words those from which steam is extracted from a stage of intermediate or low pressure for heating, cooking or other industrial purposes.

The present invention has special reference to a turbine in which a region of comparatively high pressure is maintained to supply steam for cooking purposes, while the exhaust steam from the last stage is led off for heating purposes. The higher pressure is maintained by a pressure-controlled overflow valve or stage valve between the stage of higher pressure and the succeeding one. Whenever the demand for cooking steam becomes so great as to render liable the closing of the stage valve and the consequent decrease or failure of the heating steam, live steam is supplied to the cooking system to maintain it at the proper efficiency and at the same time permit the heating system to operate satisfactorily. This is considerably more economical than supplying live steam to make up any deficiency in the heating system, because in such an arrangement the throttling losses are quite heavy owing to the great difference in pressure between the boiler steam and the heating steam. In carrying out my invention, I prefer to provide an automatic regulating member which opens the live steam inlet to the cooking conduit as soon as the pressure in the heating steam conduit falls below a predetermined minimum.

The accompanying drawing is a longitudinal section of a turbine embodying my invention.

For the purposes of illustration, I have selected a three-stage turbine, the high-pressure stage 1 receiving a supply of steam at boiler pressure through the nozzles 2. After flowing through the first stage, the steam enters a chamber 3 from which it escapes, partly through a conduit 4 of a cooking system, and partly to the low-pressure stages 5, 6 through an overflow valve 7 which is

controlled by the pressure prevailing at the spot where the steam is withdrawn. The preferred form of valve is that shown in the patent to L. Cubelic, March 19, 1912, No. 1,020,686. The exhaust pipe 8 is connected to a heating system by the conduit 9, in which a variation of the steam pressure within certain magnitudes is permissible.

A pipe 10 leading from the boiler is connected with the cooking conduit 4 through a pressure-reducing valve 11. The admission of steam from this pipe to the cooking system is controlled by a valve 12 whose stem is connected to a movable abutment, such as the piston 13 working in a cylinder 14 and exposed on one side to the pressure of the steam in the heating conduit. This pressure is exerted against the tension of a spring 15.

The operation is as follows: When the consumption of cooking steam becomes considerable and the amount of exhaust steam in the heating conduit 9 is thereby diminished to a point where the stage valve 7 is liable to close and so shut off the exhaust steam entirely, the decrease of pressure on the piston 13 enables the spring 15 to open the valve 12 and admit boiler steam to the cooking system. By this influx of live steam to the conduit 4, an increase of pressure occurs in the region 3 of the high-pressure, whereby the overflow valve 7 is opened and the desired increase of pressure in the heating conduit is obtained. In this way, the heating system is never liable to be deprived of steam, and the cooking system always has a sufficient supply of hot high-pressure steam.

In accordance with the provisions of the patent statutes, I have described the principle of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the apparatus shown is only illustrative, and that the invention can be carried out by other means.

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

1. The combination with a turbine supplying for industrial purposes and at different pressures motive fluid that has had some of its energy extracted, of means for supplementing the fluid used for one of said purposes by motive fluid supplied direct from the source of supply.

2. The combination with a turbine supplying for industrial purposes and at different pressures motive fluid that has had some of its energy extracted, of means responsive to the pressure of the fluid supplied for one of said purposes for controlling the passage of fluid supplied for another purpose.
3. In combination, a turbine arranged to supply motive fluid at different pressures for industrial purposes, conduits leading from the turbine and carrying said fluid, and valve means sensitive to fluid pressure and controlling the passage of fluid through the conduits, the valve means controlling the supply of higher pressure being responsive to the pressure in the conduit supplying the lower pressure fluid.
4. The combination with a turbine supplying high-pressure steam for cooking and exhaust steam for heating, of means for supplementing the cooking steam with steam direct from the boiler.
5. The combination with a turbine supplying high-pressure steam for cooking and exhaust steam for heating, of means for supplementing the cooking steam with steam direct from the boiler, and means for automatically controlling said supplemental supply by variations in the heating steam pressure.
6. The combination with a turbine having a conduit leading from a region of high-pressure and a conduit leading from its exhaust, of a pipe for supplying high-pressure steam, and means controlled by the pressure of the exhaust steam for connecting said pipe with the first-named conduit.
7. The combination with a turbine having a conduit leading from a region of high-pressure and a conduit leading from its exhaust, of a pipe for supplying high pressure steam to the first-named conduit, a valve controlling said pipe, and a movable abutment exposed to the exhaust steam pressure and operatively connected to said valve.
- In witness whereof, I have hereunto set my hand this 13th day of September, 1912.
- HEINRICH TREITEL.
- Witnesses:
JULIUS RINNLAND,
ALFRED WOLF.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."