

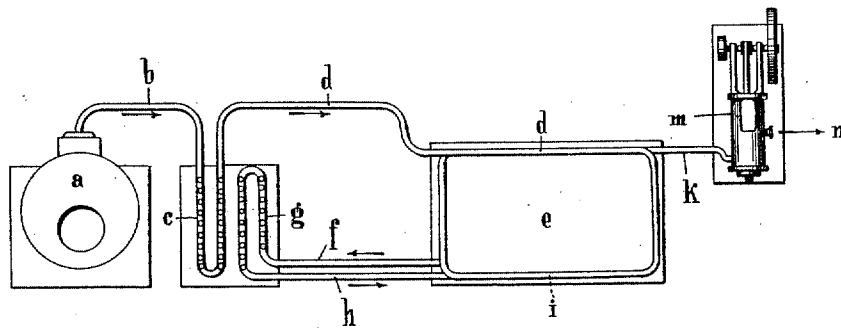
F. JENSEN.

PROCESS FOR THE TRANSMISSION OF HEAT BY MEANS OF SUPERHEATED STEAM.

APPLICATION FILED SEPT. 28, 1910.

984,431.

Patented Feb. 14, 1911.



French 420,070 - $\frac{60}{1}$

Witnesses.

M. Maud. Small
Byron B. Collins.

Inventor
Friedrich Jensen.
by Wilkinson, Fisher and
Wetherspoon. Attys
by S. J. Parker.

UNITED STATES PATENT OFFICE

FRIEDRICH JENSEN, OF KIEL-GAARDEN, GERMANY.

PROCESS FOR THE TRANSMISSION OF HEAT BY MEANS OF SUPERHEATED STEAM.

984,431.

Specification of Letters Patent.

Patented Feb. 14, 1911.

Application filed September 26, 1910. Serial No. 583,936.

To all whom it may concern:

Be it known that I, FRIEDRICH JENSEN, manufacturer, a subject of the German Emperor, and resident of Kiel-Gaarden, Prussia, Germany, (whose post-office address is Blesmannsdamm 5,) have invented a new and useful Process for the Transmission of Heat by Means of Superheated Steam, of which the following is a specification.

This invention relates to a process for the transmission of heat by means of superheated steam.

The process is chiefly intended to be used where it is desired to obtain a high temperature of as great uniformity as possible, for instance in furnaces of all kinds, such as roasting furnaces, baking ovens, etc.

It has been already attempted to use hot steam of small pressure as a source of heat for heating and baking purposes, but unsuccessfully. This want of success seems to be due to the fact that it was impossible to superheat the steam to a great extent, as it was conveyed through the superheater and the place to be heated with such a small velocity that the pipes were burned through.

The inventor has found by experiments that steam could be heated to about 550° C. without burning through the pipes if it is caused to pass through the superheating coils with the highest possible velocity. He has further found that the heat contained in the said steam, can be given off in heating pipes of small length so as to bring the temperature down to about 200° C. and less. Superheated steam can be therefore successfully used for furnaces and ovens of all kinds only by using steam of very high pressure and by passing the same through the pipes with the highest possible velocity, and only on condition that there is an opportunity for using such steam as driving power after it has been used as heat carrying medium. The fall of pressure in the steam between the boiler and the engine can be limited to a small value by suitably calculating the cross-section of the superheater pipes and of the heating pipes.

An installation for carrying out the process according to the present invention as

applied to baking ovens, is diagrammatically shown in the accompanying drawings.

Saturated high pressure steam generated in the steam boiler *a* passes through a pipe *b* into the pipes *c* of a superheater and is conveyed through a pipe *d* into the heating pipes of the baking oven *e*. The heating pipes *d* connect with a return pipe *f* which conveys the steam into another section *g* of the superheater, so that it is again superheated, and it then passes through a pipe *h* into another series of heating pipes *i* of the baking oven *e*. The pipe *i* is connected to a pipe *k* which conveys the superheated high pressure steam into a steam engine *m*. After the steam has done work in the latter, it leaves the engine at *n* and is allowed to escape into the atmosphere or is utilized in any desired manner for heating, feed water heating and the like.

The process consists, therefore, in utilizing steam, when next to a furnace there is point of consumption (steam engine) requiring large quantities of high pressure steam, as the heating means for a baking oven, the said steam, before it is supplied to the engine, being heated once or several times by a superheater where it is heated to 550°, the said superheater being protected from burning through owing to the quick absorption of heat due to the high velocity of the steam, whereupon the said steam is guided through the heating pipes of the furnace.

Claims:

1. The combination with a steam generator; of a super-heater, a pipe connecting the steam generator with the super-heater, an oven, a pipe connecting the super-heater with the oven, return pipes connecting the oven with the super-heater and the super-heater with the oven, an engine, and a pipe connecting the engine with the super-heater return pipe.

2. The combination with a steam generator; of a super-heater for raising the temperature of the steam generated to approximately 450° C. or over, a pipe connecting the steam generator with the super-heater, an oven, a pipe connecting the super-heater

with the oven, return pipes connecting the oven with the super-heater and the super-heater with the oven, an engine, and a pipe connecting the engine with the super-heater
5 return pipe.

In testimony, that I claim the foregoing as my invention, I have signed my name in

presence of two witnesses, this 10th day of September 1910.

FRIEDRICH JENSEN.

Witnesses:

JULIUS RÖPKE,
BRUNO GOSDY.