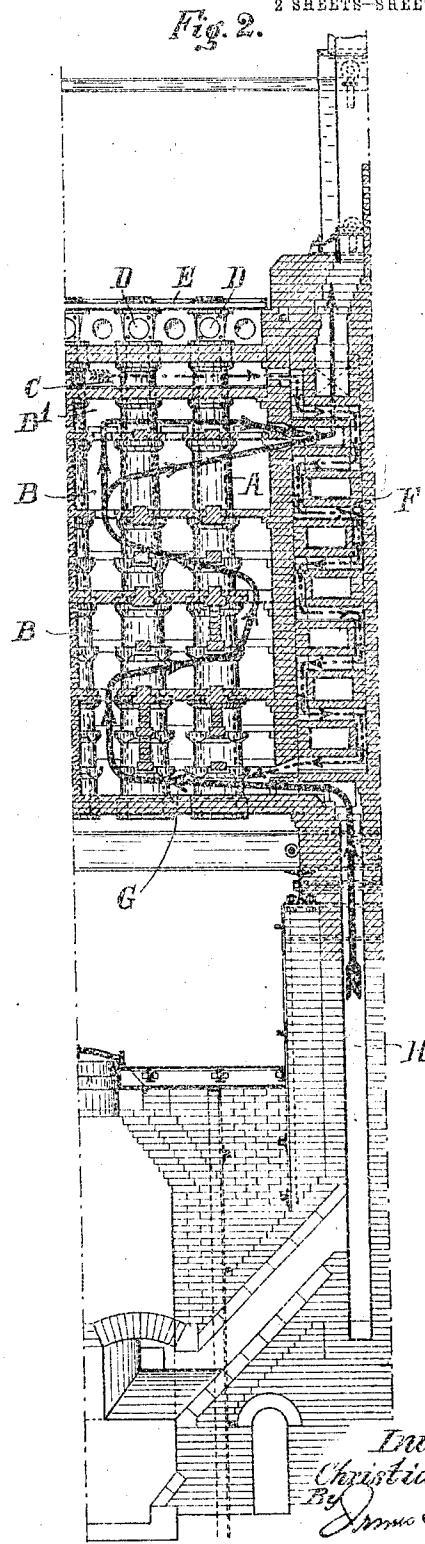
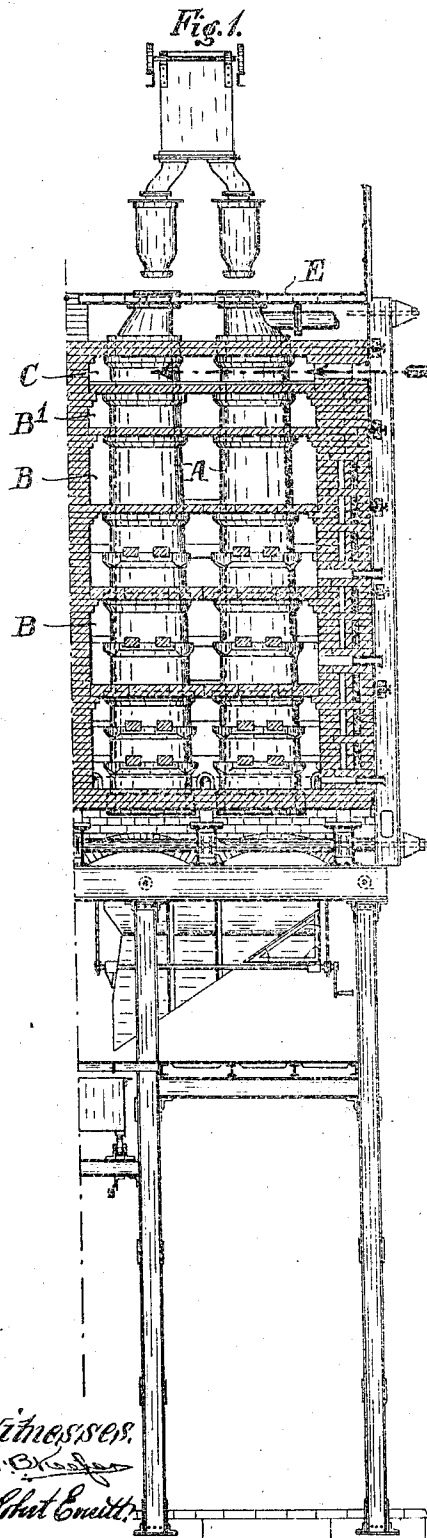


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2 SHEETS-SHEET 1.



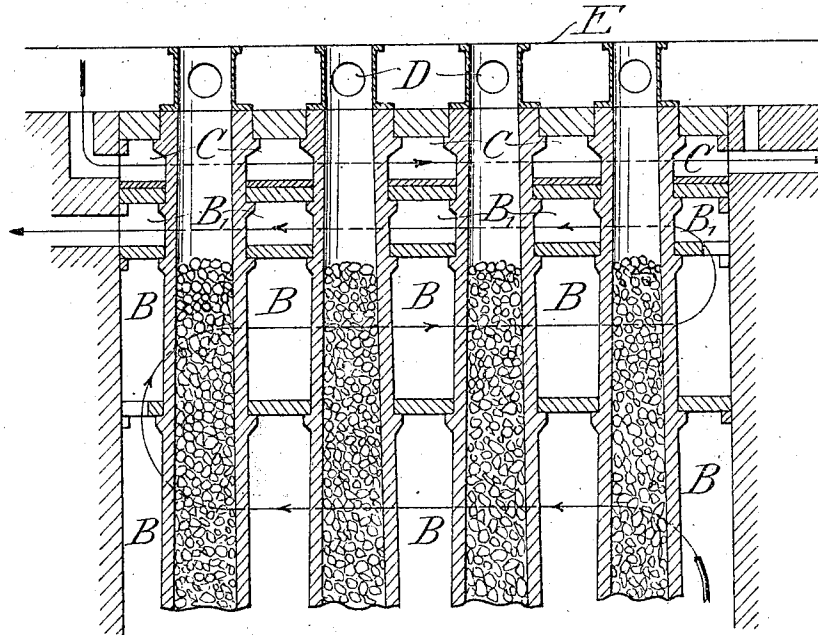
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2 SHEETS—SHEET 2.

Fig. 3.



Witnesses:

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CHRISTIAN BOLZ, OF BUDAPEST, AUSTRIA-HUNGARY.

ART OF PRODUCING GASES IN UPRIGHT RETORTS.

989,324.

Specification of Letters Patent.

Patented Apr. 11, 1911.

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To all whom it may concern:

Be it known that I, CHRISTIAN BOLZ, a subject of the German Emperor, residing at Budapest, Austria-Hungary, have invented certain new and useful Improvements in the Art of Producing Gases in Upright Retorts; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in the art of producing gases in upright retorts.

In the process for producing gas in upright retorts the retorts are completely filled with coal, and the whole retort is exposed to the distilling heat. This process is objectionable, because the temperature of the upper part of the retorts and of the floor provided at the upper part of the retorts is so high, that the charging operation is made inconvenient. Furthermore, much heat is lost at the upper part of the retorts by radiation through the upper part of the masonry and through the horizontal gas canals located on the upper part of the oven and communicating with the retorts. In some cases experiments have shown, that the temperature of the gas produced is about 300° centigrade. The reason for this considerable loss of heat resides in the fact, that if the retorts are completely filled with coal, they must be heated up to the upper floor of the oven.

The object of the present invention is to avoid the aforesaid disadvantages. For this purpose the retort is not completely filled with coal, and only that part of the retort which is filled with coal is heated, while the upper part of the same is cooled by some cooling medium such for example as air.

In the preferred form of the process the upper part of the retort is not only cooled as described, but above the level of the coal, and below the cooling chamber a separate heating chamber is provided by which the lower portion of the non-filled part of the retort is heated to such a temperature, that the gas when passing through this heated portion can not absorb any heat which would be sufficient to decompose the said gases, which leave the coal at a temperature varying from 350° to 750° C. according to the progress of the distillation and the temperature of the oven. Thereby the coal is uniformly coked, while in the old processes in which the retort is completely filled the up-

per parts of the coal are but incompletely coked, and greasy byproducts are deposited. Such a heating chamber is also advantageous, because it prevents the upper part of the retort from being excessively cooled by the cooling air, and because great differences of the temperatures of the retort are avoided.

For the purpose of explaining the invention more clearly an example of an oven adapted for carrying the process into effect is illustrated in the accompanying drawing, in which—

Figures 1 and 2 are vertical sections of said oven, these sections being taken on planes at right angles to each other. Fig. 3 is a section of the upper part of the oven corresponding to Fig. 2.

As shown in the said drawing a plurality of upright retorts A are disposed within a common heating chamber B to which heat is applied in any preferred way. Above the heating chamber B a separate flue B¹ is provided which is heated by the heating gases escaping from the main heating chamber B. Above the heating chamber B¹ a cooling chamber C is provided to which a cooling medium, preferably air, is admitted. The heat thus abstracted from the upper part of the retort and from the gases escaping from the same is preferably transmitted through a flue F to the fire-place G by which the chamber B is heated. This air (the course of which is indicated by a dotted arrow in Fig. 2) mixes in the fire-place G with producer-gas, which passes thereto through a conduit H, the course of this gas and of the mixture thereof with the heated air being indicated by an arrow drawn in full line. As shown the coal is filled within the retort only to the level of the lower wall of the heating chamber B¹. The gas produced within the retorts escapes through channels D located above the floor E of the oven.

When carrying out the process as described, the floor E and the upper parts of the retorts are held at a low temperature, and the gas produced is simultaneously cooled, while the heat abstracted from the retort is made use of for heating purposes.

I claim:

1. The herein described process of producing gas in upright retorts which comprises partially filling the retort with a gas-producing material and forming a distilling zone which corresponds to the filled portion

of the retort, and transition and cooling zones, the transition zone corresponding to the lower part of the non-filled portion of the retort and the cooling zone corresponding to the upper part of the non-filled portion of the retort, heating the distilling zone throughout its extent to a distilling temperature, heating the transition zone to a relatively lower temperature which is insufficient to decompose the gas produced, and cooling the cooling zone.

2. The process of producing gas in upright retorts, which consists in partly filling the said retorts with the material to be distilled, applying a distilling heat to the filled part of said retorts, applying to the lower portion of the non-filled part of the retorts heat at a temperature below that at which the gas generated is decomposed, and cooling the upper portion of said non-filled part of the retorts.

3. The process of producing gas in upright retorts, which consists in partly filling the said retorts with the material to be distilled, applying a distilling heat to the filled

part of said retorts, applying to the lower portion of the non-filled part of the retorts heat at a temperature below that at which the gas generated is decomposed, cooling the upper portion of said non-filled part of the retorts, and transmitting to the material heat abstracted from the upper part of the retorts.

4. The process of producing gas in upright retorts, wherein the retort is partly filled with the material to be distilled and cool air is drawn in through a cooling chamber around the upper part of the non-filled part of the retort, such air being then passed to the fire place and through the flues around the filled part of the retort and around the lower part of the non-filled part of the retort.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

CHRISTIAN BOLZ.

Witnesses:

MICHAEL TORNOR,
LESLIE L. CSASZI.