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# UNITED STATES PATENT OFFICE.

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PROCESS OF CHARGING UPRIGHT GAS-RETORTS.

955,970.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, ERNST GEORG BERNHARD KÖRTING, a citizen of the Empire of Germany, residing at Mariendorf, near Berlin, Germany, have invented certain new and useful Improvements in Processes of Charging Upright Gas-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.

This invention relates to improvements in a process for charging gas retorts, and particularly upright retorts, with coarse and fine materials; and the object of my improvements is to produce a perfect distillation of coals of different sizes and a rapid separation of the gases produced, from the coal.

During the process of distillation, upright retorts must always be completely filled. Now, if such a retort is entirely filled with pieces of coal the gas will readily escape through the passages formed by the coal. If, however, the retort contains only fine coal the spaces left for the escaping gases are small, so that a considerable pressure of gas is produced, whereby frequently a considerable amount of gas is wasted, and furthermore the wall of the retort is bulged.

Now, this invention consists in so placing the coal within the retort, that the coarse and fine parts are separately disposed within the retort, so as to form substantially separate pillars or columns, each of which consists of coal of substantially the same size, and which columns are in contact with each other along a substantially vertical face and are exposed equally to the heat of the furnace. By this arrangement, a very uniform distillation of the coal is produced, and furthermore the gases distilled from the pillars or pillar of fine coal can escape upward through the adjacent pillar or pillars of coarse coal more readily, than when passing through thick layers of fine coal.

To illustrate the invention an example of an apparatus, whereby the process may be carried out, is shown in the accompanying drawing.

In the example shown, coal of ordinary constitution is taken from a distant container *a* into a hopper car *b* from which it is discharged into a receiver *d* located above the upright retorts *c*, contained in an oven or furnace *r*. By means of a partition wall

*e*, the receiver *d* is divided into two separate chambers *f* and *g*, one of which, for instance *f*, is designed to receive the coarse coal, while the chamber *g* receives the fine coal. Above the chamber *g* an inclined sieve *h* is provided, by means of which the coal falling from the hopper car *b* into the two chamber receiver *d* is automatically sorted, the coarse parts of the coal sliding into the chamber and forming one column while the fine coal passes through the sieve into the chamber below said sieve and forms a substantially separate column. The receiver is provided, at its bottom, with separate discharges adapted to be closed by a slide valve *i*. Below the receiver *d* I provide, according to the present invention, one or more distributing or charging funnels or hoppers *m*, mounted to travel on rails *k* and divided by a partition *n* into two compartments *o* and *p* arranged in registry with the chambers *f* and *g* of the receiver *d*. Each of the compartments has its individual outlet, controlled by a slide *q*, the two outlets of each funnel being in registry with one of the sets of retorts *c*. To feed the different sets of retorts, some of the funnels or hoppers *m* may be bent to the left, and others to the right.

As will appear from the drawing, the coarse and fine coal discharged into a distributing funnel displaceably mounted on rails will separately, but simultaneously pass into the retort *c* when the slide valve *q* is opened. They will therefore form adjacent substantially separate pillars of coal of different sizes within the retort which are in contact with each other along a substantially vertical base and are equally exposed to the heat of the furnace. Therefore, when the furnace is heated, the gas distilled from the fine coal will pass into the adjacent parts of the pillar or column of coarse coal all over the height of the retort, and it will rapidly escape upward through the spaces formed within the pillars of coarse coal, whereby the danger of losing gas or of bulging the retorts is avoided.

Though for the purpose of explaining the invention an apparatus is shown in the drawing by means of which but two sizes of coal can be separately charged into the retort, it will be evident to those skilled in the art that, by a simple modification, the apparatus can be adapted to charge more than two different sizes, and that the apparatus can be adapted to the requirements of dif-

ferent gas plants without departing from the invention. The process described above may also be applied to retorts the axis of which is not vertical.

5 I claim:

The improvement in the art of distilling coal, which consists in forming a vertical layer or column of coarse coal and adjacent thereto a substantially separate layer or column of fine coal, such columns being in con-

tact with each other along a substantially vertical face and being exposed to an equal degree of heat.

In testimony whereof I hereunto affix my signature in the presence of two witnesses. 15

ERNST GEORG BERNHARD KÖRTING.

Witnesses:

HENRY HASPER,

WOLDEMAR HAUPT.