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WATER GAS PRODUCER OF H. KOPPERS
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The invention refers to a water gas producer with an alternating steam and air supply which distributes the fuel to be gasified under conical grates provided with openings.

The water gas producers with this type of conical grates have been generally used heretofore only in air gas producers and proven very satisfactory especially if the rotating grate is shaped as a conical grate and is provided with a mechanism for breaking the slag. It has now been surprisingly found that the yields of water gas with this type of water gas producers can be considerably increased if the steam used in the production of the gas is not added in a vertical direction underneath the grate but horizontally to the bottom row of the openings of the grate or in a direction below them. The action produced thereby must be explained by having the steam no longer take the path of least resistance in the vertical direction to the upper grate openings, but that the steam rising from the lower openings upward becomes uniformly

distributed through all the openings. This effect is particularly noticeable in water gas producers, because in these, unlike the air gas producers, the larger amounts of air required are added separately from the smaller amounts of steam added underneath the grate. The grate openings must therefore have as a minimum the size required for the greater air consumption so that the openings of the grates measured by the air requirements produce a good distribution of the hot blast. However, this will require that the distribution of the steam in amounts smaller than air will be particularly non-uniform whenever the steam is introduced like the air underneath the grate, because with this steam distribution, primarily only the part of the fuel bed above the grate is treated with steam, while the outer edges of the fuel bed are unacted upon by the steam.

The invention consist therefore in that the openings of the steam lines are made independent of the air supply and are so shaped that the steam reaches the grate space at a level of the lower grate openings or below them. The invention is so executed that the rising steam supply line is connected to a circular line arranged essentially in the center of the grate space and provided with outlet slits on the sides.

The invention is further explained in the drawing

on an example in which the lower part of the steam producer is shown in a vertical cross section. The gas producer shaft is constructed with a water cooled jacket 10. The conical slits 20 direct the air essentially horizontally and uniformly distribute it over the whole periphery of the grate. Air required for the hot blast reaches underneath the grate through openings 21 into the space underneath the grate and is distributed through openings 20 sufficiently large to meet the air requirements during the hot blow and approximately uniformly over the whole cross section of the gas producer.

The steam required for the production of gas is led through a vertically rising line 22 into the grate space. The line 22 ends in a circular line 23 which has slit openings 24 directed sideways somewhat below the horizontal line. The circular line 22 is located at approximately the level of the bottom grate openings 25 so that the steam escaping from the circular line 23 moves in a direction somewhat underneath the openings 25. The steam can now become approximately uniformly distributed from the lower row of openings 25 through all the openings of the grate so that the whole cross section of the gas producer shaft is uniformly acted upon by the steam.

Because of the practically uniform distribution of steam over the whole cross section of the gas

producer a maximum yield of water gas can be obtained.

The steam leaves through the openings 24 of the circular line 23 in equal amounts by having the cross section of the openings 24 increase inside from the inlet end of the pipe line 22.

Patent Claims

1) A water gas producer with an alternate supply of steam and hot blast through a conical roast, characterized by having the openings of the pipe line supplying the steam consist of slits approximately at the level of the bottom row of the openings of the grate, and so shaped that the steam be distributed uniformly over the cross section of the grate in the direction of the lowest row of the grate openings, or somewhat lower.

2) Water gas producer according to claim 1 characterized in that the steam pipe line is connected with a circular line at the level of the lower row of grate openings in the vertical center plane of the grate and is provided with slits on the outside.