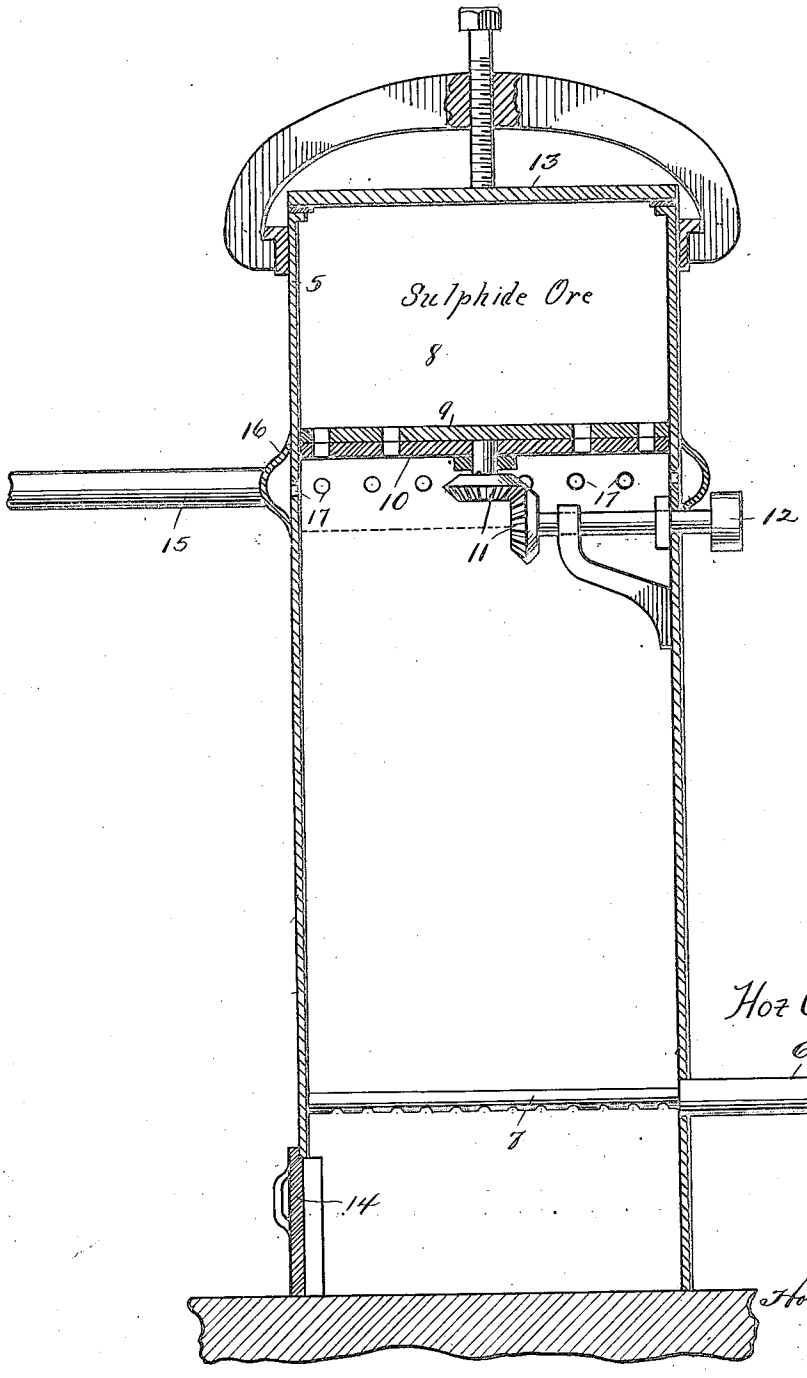
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PROCESS OF DESULPHURIZING ORES AND PRODUCING A COMBUSTIBLE GAS.

APPLICATION FILED MAY 20, 1919.

1,403,283. Patented Jan. 10, 1922.



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PROCESS OF DESULPHURIZING ORES AND PRODUCING A COMBUSTIBLE GAS.

1,403,283. Specification of Letters Patent. Patented Jan. 10, 1922.

Application filed May 20, 1919. Serial No. 298,408.

To all whom it may concern:

Be it known that I, HORTON BATCHELOR, a citizen of the United States, residing at Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Processes of Desulphurizing Ores and Producing a Combustible Gas, of which the following is a specification.

This invention relates to a new and useful process of and apparatus for desulphurizing ores and securing as a useful byproduct a highly combustible gas.

In my copending application Serial Number 147,483, filed Feb. 8, 1917, I have disclosed a process and an apparatus for generating a gas containing substantially H 51 per cent and CO 49 per cent, by spraying a mixture of hydrocarbon fuel and water upon a highly heated mass of refractory material. Such hydro-carbon fuel may be powdered coal dust, oil or any other suitable hydro-carbon bearing material. The present invention contemplates the use of a kiln or retort of any suitable type into which the aforesaid gas is introduced as it comes from the generator aforesaid and while still in a highly heated condition. The gas is preferably introduced into the lower part of the kiln and as it rises, finely ground sulphide ore is sifted therethrough. Advantage is thus taken of the well known affinity of hydrogen for sulphur when the two are in a heated condition. Some of the hydrogen combines with the sulphur of the ores and not only performs the useful purpose of desulphurizing the ores but makes H_2S which, it is well known, is a combustible gas. There is not, ordinarily, enough sulphur in the ores to combine with all of the hydrogen. The CO content of the incoming gas is not affected and the gas finally delivered from the apparatus is represented by $H—H_2S—CO$ which as a whole is highly combustible and may be employed in a furnace to generate power for any useful purpose.

For the purposes of explanation I have indicated in the accompanying drawing an apparatus adapted to carry out the process constituting the invention. The figure shown is a view partly in elevation and partly in vertical section. In the drawing 5 designates a cylinder constituting a retort or kiln into which a highly heated gas, $H—CO$ is introduced through a pipe 6 from the generator shown in my application aforesaid while still in a heated condition. I preferably introduce the gas into the retort through a perforated pipe 7 which distributes the gas evenly over the entire area of the retort. Finely ground sulphide ore from a chamber 8 is sifted through the rising gas by any suitable means such, for example, as a pair of perforated plates 9 and 10 the former being fixed and the latter being capable of rotation by means of gearing 11 and a pulley 12. Any suitable closure such as a man hole cover 13 may be employed for tightly closing the top of the chamber 8 and a door indicated at 14 provides means for permitting the removal of the desulphurized ores. An outlet pipe 15 connects with a manifold 16 which extends entirely around the retort and has communication at a plurality of points 17 with the interior of the retort. The outlet pipe serves to conduct the gases to a furnace, not shown, where they may be usefully employed for the generation of heat and power. By providing the manifold 16 the outlet of gases from the kiln is rendered uniform throughout the circumference thereof and the setting up of currents in channels is prevented. It is manifest that the process is capable of being carried out by apparatuses of widely varying kinds. For example, it is quite common in cement and like kilns to employ cylinders lying horizontally or at an angle and to feed material in at one end and introduce heated gases at the other end. It is well within the natural development of the invention to employ these well known kilns if desired.

Having described my invention what I claim is:

1. The herein described process which consists of bringing a preheated hydrogen gas into contact with sulphide ores to produce $H—H_2S$.

2. The herein described process which consists in preparing a mixture of H and CO gases in a heated condition and then subjecting sulphide ores to the action of said H and CO mixtures while the latter is still heated to cause the sulphur to unite with some of the H to produce $H—H_2S—CO$.

In testimony whereof I affix my signature.

HORTON BATCHELOR.