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PRODUCER GAS PURIFYING APPARATUS

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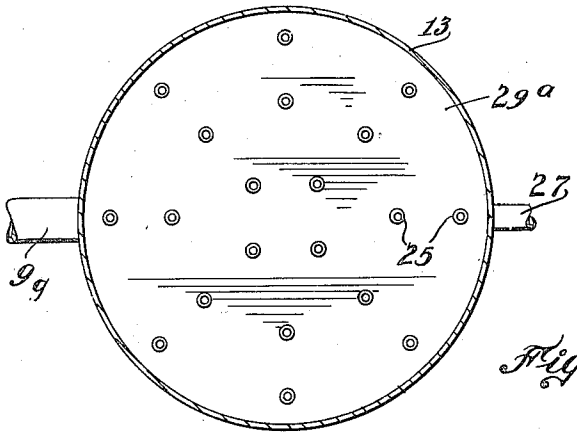


Fig. 1

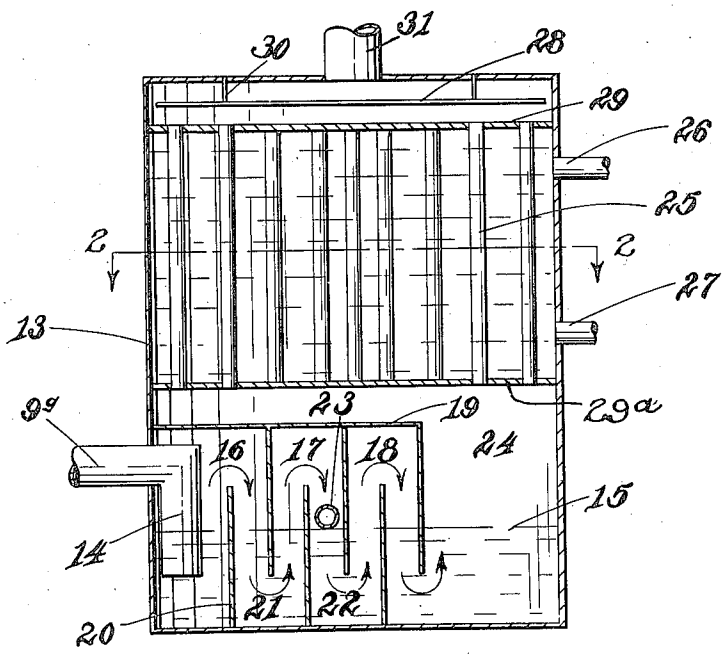


Fig. 2

Inventor

Ernest Hill Smith

By Samuel Herrick

Attorney

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PRODUCER GAS PURIFYING APPARATUS

Ernest Hill Smith, Woodward, Okla.

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2 Claims. (Cl. 183—23)

The object of this invention is to provide a gas purifying apparatus, so constructed that it will be extremely economical of manufacture while at the same time it will be highly efficient in operation. Further objects of the invention will be set forth in the detailed description which now follows.

In the accompanying drawing:

Fig. 1 is a vertical section view through the purifier and cooler hereinafter described, and

Fig. 2 is a horizontal section view upon line 2—2 of Fig. 1.

Like numerals designate corresponding parts throughout the several figures of the drawing.

Gas to be purified is delivered to the purifier through a pipe 9ᵉ. The end of the pipe 9ᵉ is downturned within the purifier as indicated at 14, the lower end of the pipe lying below the level of water 15 within the purifier. A series of baffles 16, 17 and 18 extend downwardly from a top plate 19 to a point below the water level. A series of baffles 20, 21 and 22 extend upwardly from the bottom of the purifier to a point above the water level, the path of the generated gas being as indicated by the arrows so that the gas is scrubbed free of impurities as it is caused to pass several times through the water seal constituted by the water 15. A water overflow pipe serves to maintain the water level at the proper point. From the compartment 24 the generated gas passes upwardly through a series of tubes 25, said tubes being kept surrounded by cooling water through water pipes 26 and 27. The cooled gas is not permitted to pass directly from the cooler but is slowed up by being forced to pass around the edge of a baffle plate 28 which is suspended over the head 29 of the cooler by bolts 30. The tubes 25 are mounted in the top or head plate 29 and a bottom plate 29ᵃ. A pipe 31 conducts the cooled gases off to a suitable point of storage. The condensation of the gases under the action of the cooling tubes 25 brings about such slowing down of the gas that many more of the impurities have time to separate therefrom and drain back into the lower portion of the purifier.

By virtue of the construction described, I produce a gas purifier at a very low cost. It will be observed that the parts are all of simple and economical construction and are brought into a very compact relation to each other. Despite this compact arrangement of the parts, the capacity of the purifier is increased by the manner in which the wall 19 is spaced from the bottom horizontal wall by which the battery or series of tubes 25 is carried.

It should be noted that substantially the whole area of the last named wall is available for the reception of said tubes 25. Thus, these tubes may be in such number as to pass and cool a very large volume of gas. At the same time, the space beneath these tubes is caused to accommodate a relatively large number of the baffles 16, 17, 18 and 20, 21, 22.

This capacity is created by the way in which the supporting wall 19 of these baffles is spaced from the lower tube-supporting wall, so that after the gas has had an extended travel back and forth over the baffles and through the body of water 15, it may travel back horizontally over the wall 19 to reach the very large number of tubes accommodated by the said lower tube-supporting wall.

It is to be understood that the invention is not limited to the precise construction set forth but that it includes within its purview whatever changes fairly come within either the terms or the spirit of the appended claims.

Having described my invention, what I claim is:

1. A cooler having an outer shell divided by a horizontal wall into upper and lower compartments, a second horizontal wall spaced below the first-named horizontal wall, said second horizontal wall extending more than halfway but less than all the way across said shell, a plurality of vertical baffles depending from the second horizontal wall and terminating short of the bottom of the shell, and the last of which depends from the inner end of said second horizontal wall, a plurality of upstanding baffles carried by the bottom of the shell alternating with the first-named baffles, means for introducing a gas to be cooled beneath the second horizontal wall adjacent one side of the shell, means for maintaining a water level at a point materially below the top of the baffles which are carried by the bottom of the shell, and materially above the bottom of the baffles which are carried by the second horizontal wall, a third horizontal wall spanning the shell adjacent the upper end thereof and lying in materially spaced relation to the first horizontal wall, a plurality of vertical tubes extending between and supported in the first and third horizontal walls, said tubes being of such number and so located as to be spaced at different points over substantially the whole area of said walls, means for maintaining a body of cooling liquid about said tubes, the lower ends of

the tubes opening through the first-named horizontal wall to permit the passage of the gases passing said baffles upwardly therethrough, the spacing of the first and second horizontal walls from each other permitting said gases, after they leave the last of the baffles, to flow horizontally over the second horizontal wall and to enter said tubes over the whole lower area of the first-named horizontal wall.

2. A cooler as recited in claim 1, in combination with a horizontal baffle spanning the shell above the third horizontal wall and lying in spaced relation thereto, means for supporting said baffle in spaced relation to the top of the shell, and a gas outlet pipe in the top of the shell, located substantially centrally thereof, said baffle being nearly but not quite equal in diameter to the shell to thereby equalize the flow of the gases through all of the pipes as said gases pass to said outlet pipe.

ERNEST HILL SMITH.