

P. PORGES.
 STILL FOR USE WITH A HIGH VACUUM.
 APPLICATION FILED DEC. 28, 1910.

1,011,079.

Patented Dec. 5, 1911.

Fig. 1

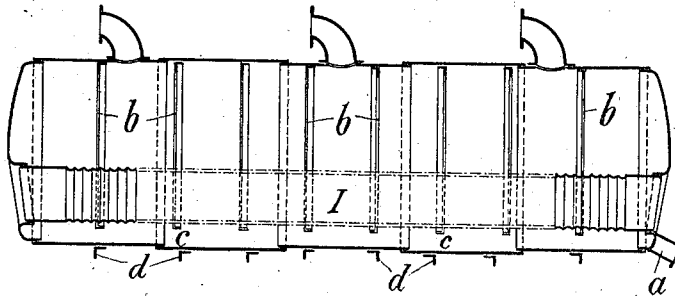


Fig. 2

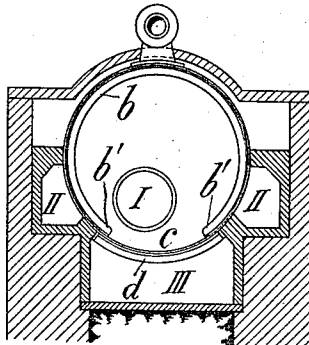
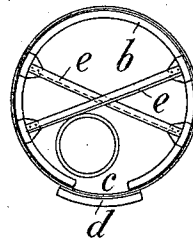


Fig. 3



WITNESSES:

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STILL FOR USE WITH A HIGH VACUUM.

1,011,079.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, PHILIPP PORGES, manager, subject of Austria-Hungary, residing at Königsfeld, near Brünn, Moravia, Austria-Hungary, have invented a new and useful Improvement in Stills for Use with a High Vacuum; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to stills for use with a high vacuum.

Stills, in which a high vacuum is produced and whose diameters, in practice, must generally be very large in order to contain a suitable chamber, must be made of thick sheet metal. This has the defect that, on the one hand, the exchange of heat is bad and, on the other hand, the shell of the still must be highly superheated from the outside, which as is well-known is disadvantageous for the same. In order to be able to employ thin sheet metal for remedying these defects, when the stills were large the shells of the same have been stiffened within and without by closed rings. In the stills which have been employed heretofore in the petroleum industry for distilling heavy oils and have been fired from without in the manner of French or elephant boilers, such stiffening members are however worthless after a short time, because the flue gases act at a high temperature directly not only on the shell of the still but also on the stiffening members, and in consequence of the mass of material at the stiffening members the same readily become red-hot, whereby they lose their strength and become inoperative. Therefore such large stills of thin sheet metal could only work with a low vacuum.

A primary object of my invention is to provide a large still, made of thin sheet metal, which in consequence of its construction has not attached to it the above mentioned disadvantages so that it is particularly suitable for working with a high vacuum.

One illustrative embodiment of my invention and two modifications thereof are represented by way of example in the accompanying drawing, wherein:—

Figure 1 is a sectional elevation, and Fig. 2 a cross-section showing one form of my still; Fig. 3 is a cross-section through one modified form.

Referring firstly to Figs. 1 and 2, my still

comprises a boiler, of the Cornish boiler type, through whose fire tube I the first and consequently hottest flue gases pass. This fire tube requires no stiffening, when a high vacuum is used, because it is not subjected to compression strain, but is subjected to interior pressure of the atmosphere. The flue gases give up the greater part of their heat in the fire tube and have a correspondingly diminished temperature in the side flues II outside of the still. The heat in these flues is so slight that stiffening members may be provided on the inside of the boiler adjacent to said flues, and these members will not be in any way injured by this slight heat. These stiffening members may not however be made as closed rings, because otherwise it would not be possible completely to empty the still through the pipe *a*. For this reason the internal, open stiffening rings *b* are open below, and curved members *d* are attached to the outer wall of the shell of the still at places corresponding to the openings *C*, said members preferably projecting at both sides beyond the free ends *b'* of the rings. In this manner the openings in the open rings are bridged over and the shell of the still is stiffened over its entire periphery by the members *b* and *c* which together form closed rings. The curved members *d* cannot be made red-hot because they are in the bottom flue III which is traversed by relatively cold products of combustion.

In the modified still shown in Fig. 3 stays *e* are provided, in addition to the open rings *b*, in order to be able to make the latter as small as possible.

I claim:—

In a still of the character described, the combination of a shell, a plurality of internal, open stiffening rings having their openings at the bottom of the shell, and a plurality of curved members, each mounted outside the shell in proximity to one of said openings and bridging over the same, a free passage for liquid along the bottom of the shell being left.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

PHILIPP PORGES.

Witnesses:

FELIX BRECHER,
AUGUST FUGGER.