

(No Model.)

H. PROPFE.
DISTILLING APPARATUS.

No. 478,265.

Patented July 5, 1892.

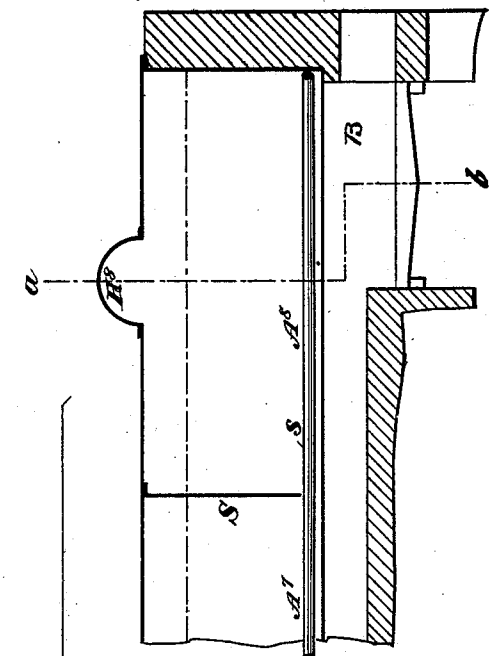


Fig. 1.

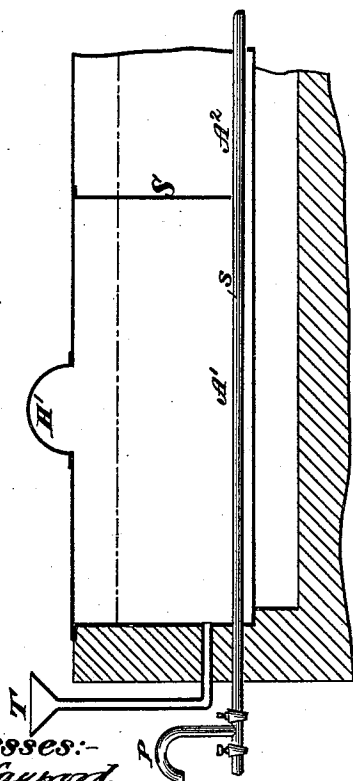
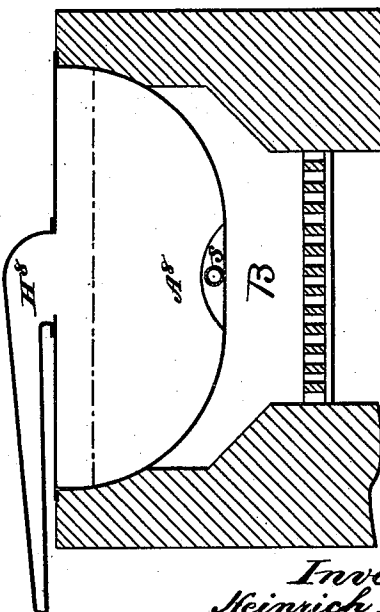


Fig. 2.



Witnesses:-
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UNITED STATES PATENT OFFICE.

HEINRICH PROPFE, OF MANNHEIM, GERMANY.

DISTILLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 478,265, dated July 5, 1892.

Application filed May 22, 1890. Serial No. 352,776. (No model.) Patented in Germany January 30, 1890, No. 55,025; in France February 19, 1890, No. 203,865; in Switzerland February 19, 1890, No. 1,956; in England February 24, 1890, No. 2,955; in Belgium February 27, 1890, No. 89,650; in Italy April 21, 1890, XXIV, 27,349, LIV, 88; in Spain May 24, 1890, No. 10,689, and in Austria-Hungary June 12, 1890, No. 8,574 and No. 22,624.

To all whom it may concern:

Be it known that I, HEINRICH PROPFE, a subject of the Emperor of Germany, and resident at Mannheim, Germany, have invented new and useful Improvements in Distilling Apparatus, (for which I have obtained patents as follows, viz: in Germany, No. 55,025, dated January 30, 1890; in France, No. 203,865, dated February 19, 1890; in Switzerland, No. 1,956, dated February 19, 1890; in England, No. 2,955, dated February 24, 1890; in Belgium, No. 89,650, dated February 27, 1890; in Italy, XXIV, 27,349, LIV, 88, dated April 21, 1890; in Spain, No. 10,689, dated May 24, 1890, and in Austria-Hungary, No. 8,574 and No. 22,624, dated June 12, 1890,) of which the following is a specification.

The principal object of this invention is to provide economical means for the distillation of coal-tar in gas-works or other places by a continuous process.

I will first describe my apparatus with reference to the accompanying drawings, and afterward point out its novelty in a claim.

Figure 1 represents a longitudinal section of the apparatus, the central part being broken away to reduce the length. Fig. 2 represents a transverse section in the line *a b* of Fig. 1.

The body of the apparatus consists of an elongated tight wrought-iron box divided by partitions *S* into a train of separate stills or compartments—eight, for example—*A' A² A³ A⁴ A⁵ A⁶ A⁷ A⁸*, which communicate with each other below the partitions. Each compartment is provided with a still-head *H' H² H³ H⁴ H⁵ H⁶ H⁷ H⁸* for the purpose of carrying off the distillate. Under the compartment or still *A⁸* at one end of the train is a furnace *B*, through which a flue runs under the several stills in the train.

T is a feed-pipe, which enters the compartment *A'* farthest from the furnace or source of heat, whence the tar falls under the partitions *S* through the several stills or compartments successively.

s is the exit-pipe which runs through the whole train of stills or compartments and under the partitions *S*, but is only open to the compartment or still *A⁸* next the furnace or source of heat. Its outlet is beyond the compartment *A'*, which is farthest from the fur-

nace, where it is provided with an overflow swan-neck *P* or a cock, by which the level of the tar is kept constant throughout the several compartments of the apparatus.

The operation of the apparatus is as follows: At the start the apparatus is filled with tar to about two-thirds its height. As the compartments are separated from each other by the hydraulic seal of the partitions *S* dipping into the tar, the distillation begins first in the compartment *A⁸* nearest the furnace, and successively in the others, whereby the contents of the compartment *A⁸* are gradually converted into pitch by the continued heating. When this stage (which is easily recognized by testing the nature of the distillate) is reached, the tar is supplied at *T* continuously to the compartment *A'* farthest from the furnace, whence it passes below the first partition *S* to the next compartment *A²*, and so on until it reaches the compartment *A⁸* nearest the furnace. In its passage through the several compartments the temperature of the tar is constantly increasing, and consequently the distillates passing over from successive compartments have progressively higher boiling-points. The inflow of the tar and the heating of the apparatus are gradually regulated in such manner that, for example, from the first to the fourth compartments only so-called "forerunnings" and water distill continuously, from the fifth and sixth so-called "light oil," and from the seventh and eighth "green oil." It is desirable that a stream of superheated steam be introduced into the last two compartments, as the distillation of the so-called "green oil" is thereby considerably hastened. The pitch passing out from the last compartment flows slowly through the outlet-tube *s*, passing through the several compartments in a reverse direction to the flow of the tar through the compartments, whereby it is gradually cooled and passes out at such a comparatively low temperature that it will not ignite, while at the same time that the pitch is thus gradually cooled its heat contributes to the heating of the contents of the tar in the several compartments.

The above-described apparatus may be used

with equal advantage for distilling brown coal-tar, peat-tar, wood-tar, crude petroleum, and other mineral oils.

What I claim as my invention is—

- 5 In an apparatus for distilling tars and mineral oils, the combination, with a train of stills, the adjacent ones of which have intercommunication between their lower parts, of a furnace at one end of the train and a flue running therefrom to the other end of the train,
10 a feed-pipe for feeding the still at the end of the train farthest from the furnace, and an

exit-pipe communicating only with the still nearest the furnace and running through the several stills of the train, substantially as and 15 for the purpose herein set forth.

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

HEINRICH PROPFE.

Witnesses:

GUSTAV MÜLLER,
G. FREY.