

UNITED STATES PATENT OFFICE.

JOSEPH C. F. CHEEVER, OF NEW YORK, N. Y.

IMPROVEMENT IN APPARATUS FOR PREPARING ANTHRACENE.

Specification forming part of Letters Patent No. 131,393, dated September 17, 1872.

To all whom it may concern:

Be it known that I, J. C. F. CHEEVER, of the city, county, and State of New York, have made an invention of a new and useful Apparatus for Obtaining Anthracene from Coal-Tar Pitch; and I hereby declare that the following is a full, clear, and exact description and specification of the same, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 represents a top or bird's-eye view of my apparatus, partly in section. Fig. 2 represents a vertical section longitudinally through the line A B.

Similar letters indicate corresponding parts.

This invention consists in certain combinations of a pitch-tank, tempering-reservoir, still, and condenser, for the purpose of obtaining anthracene from coal-tar pitch, and these combinations are set forth specifically at the end of this specification.

To this end I provide, first, a tank, C, capable of sustaining an atmospheric pressure of about twenty-five pounds to the square inch. In this tank I place coal-tar pitch, which has been deprived of all or nearly all its light oils, and also its naphthaline by distillation. Into the top of this tank is forced through the small pipe D, by means of an air-forcing pump, E, atmospheric air under sufficient pressure to drive the pitch up and into the tempering-reservoir F through the pipe G, which connects with the lower portion of the tank C and the top of the reservoir F. The reservoir is so placed that the gases from a furnace, O, can be directed across its entire bottom, or can be led into the flue H direct, in order to control the temperature of the pitch in the reservoir, which should be simply of such consistency as to flow readily, by gravity, through the short pipe I at the bottom of the reservoir into the still K. The still K is peculiar in its construction, as its bottom is partitioned by walls made across it, forming shallow compartments, which do not connect save by means of the overflow-pipes L L', which are so arranged in relation to the said walls that the pitch which enters the compartment M shall flow toward and through the pipe L into compartment M', and thence through pipe L'

into compartment M''. The bottom of the said still is also inclined on an angle, so that the pitch shall flow by gravity toward the exit-pipe N. The pipes L' L are also inclined at an angle with the walls, so that the pitch shall flow from near the top toward the bottom of the compartment. This serves to keep the pitch from hardening, and also to keep the compartments full. Under the still the gases and products of combustion from the furnace O pass, and by this heat the pitch is vaporized partially, and the anthracene thrown off while the pitch flows from compartment to compartment, and from the exit-pipe N. The vapor containing anthracene passes from the still by means of the pipe P, connected to the top, and thence into the condenser Q, which is surrounded by water contained in the tank R, in such quantity as may be necessary, regulated by the small cocks S' S; after the anthracene has been thus obtained it is drawn off and filtered and pressed. The hand-holes t t' are for the purpose of cleaning the interior of the condenser and tank when necessary. The valve V in pipe I is for the purpose of regulating the flow of pitch from the tempering-reservoir into the still.

The operation is as follows: Having partly filled tank C with pitch, which has been deprived of all its light and such heavy oils as contain naphthaline, the air-pump E is set to work, and the thick pitch is forced into the reservoir F, and by heat is warmed enough to flow by gravity through the pipe I in such quantity as can be advantageously acted upon by the heat under the bottom of the still. As it flows into and along the compartments and out the exit-pipe N the pitch is separated continuously from the anthracene it contains, the rapidity of the flow of pitch determining the nature of the distillation. The vapor containing the anthracene passes from the top of the still to the tank Q, is condensed, and afterward drawn off, filtered, and pressed.

It will thus be observed that my apparatus provides for the continuous production of anthracene in a practical and convenient manner.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, substantially as herein

set forth, of a tank, arranged with air-pipe and air-pump, a tempering-reservoir, still, and condenser, for the purpose of continuously separating anthracene from coal-tar pitch, substantially as herein described.

2. The combination, substantially as herein set forth, of a tempering-reservoir, still, and condenser, for the purpose of separating anthracene from coal-tar pitch, substantially in the manner described.

3. The combination, substantially as herein set forth, of a still having compartments connected by overflow-pipes, arranged substan-

tially as described, and a condenser for the purpose of continuously separating coal-tar pitch from anthracene, as set forth.

4. The process, substantially as herein set forth, for separating coal-tar pitch from the anthracene it contains by passing said pitch, by gravity, into and through a series of heated compartments, provided with overflow-pipes, substantially as herein described.

JOS. C. F. CHEEVER.

Witnesses:

ISAAC D. FLETCHER,
HARVEY H. BROWN.