No. 661,497. Patented Nov. 13, 1900.

T. A. CLAYTON.

METHOD OF EXTINGUISHING FIRES IN CLOSED COMPARTMENTS

(Application filed Dec. 26, 1899.)

(No Model.)

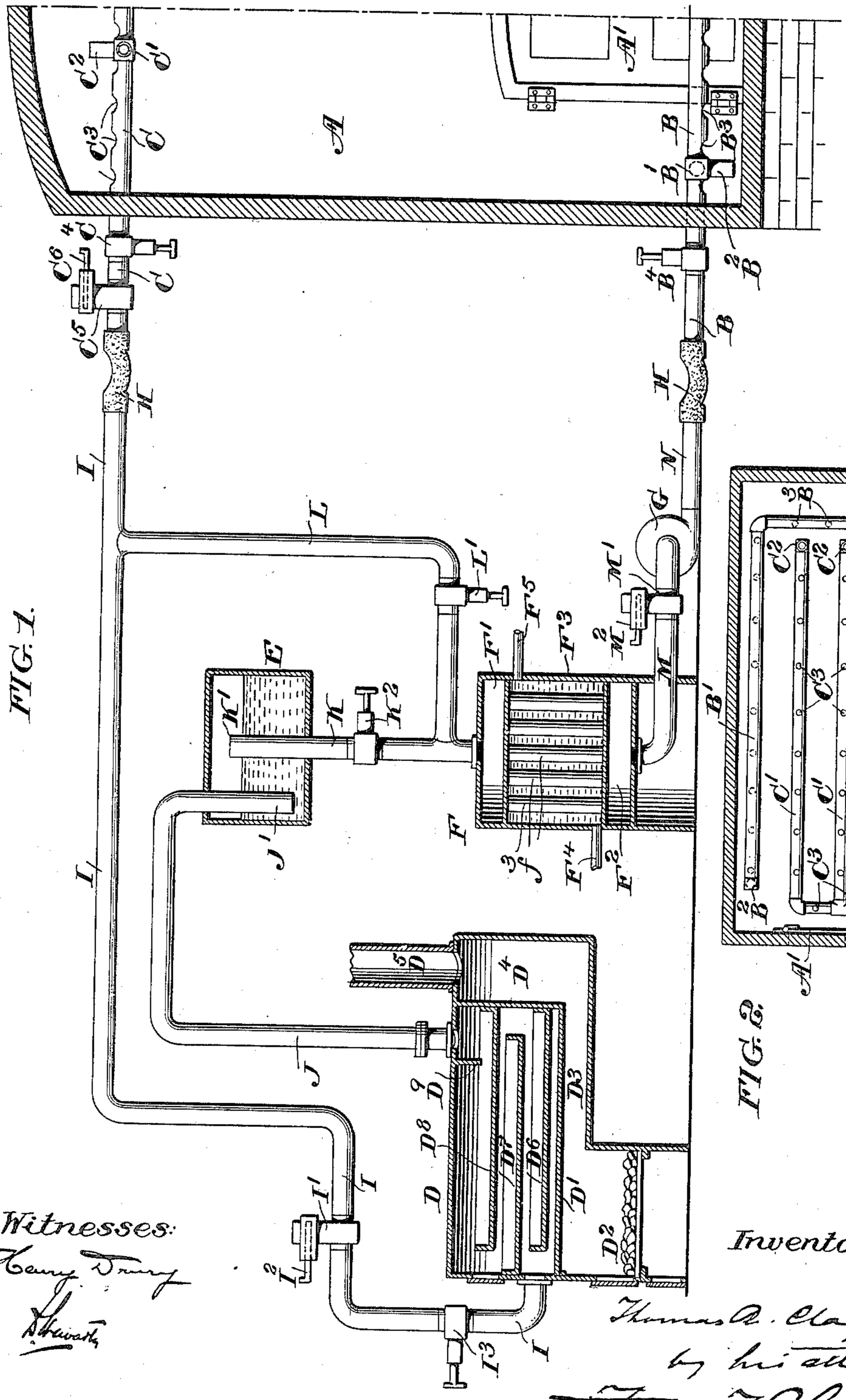

FIG. 1.

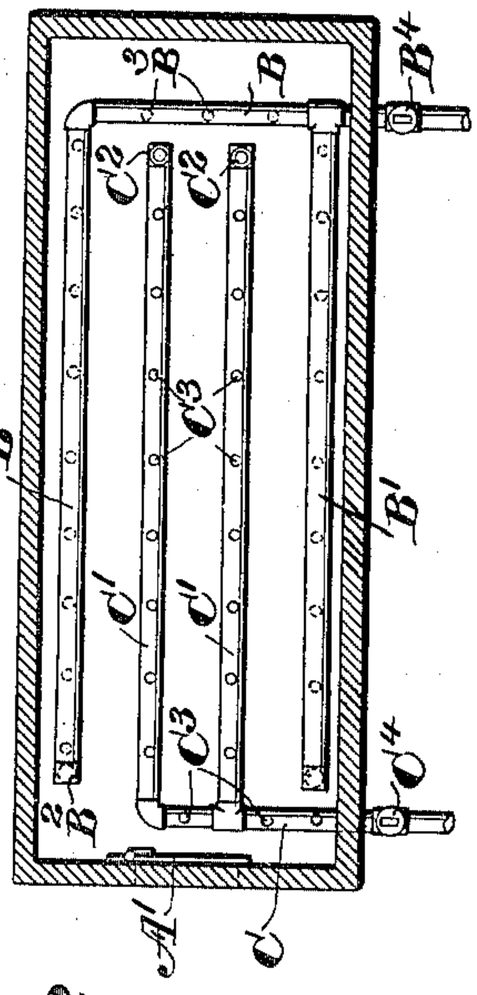

FIG. 2.

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METHOD OF EXTINGUISHING FIRES IN CLOSED COMPARTMENTS.

SPECIFICATION forming part of Letters Patent No. 661,497, dated November 13, 1900.

Original application filed July 21, 1899, Serial No. 724,660. Divided and this application filed December 26, 1899. Serial No. 741,521. (No specimens.)

To all whom it may concern:

Be it known that I, THOMAS A. CLAYTON, a citizen of the United States of America, residing in the city, county, and State of New York, have invented a certain new and Improved Method of Extinguishing Fires in Closed Compartments, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to the method of extinguishing fires in closed compartments in accordance with which a gas incapable of supporting combustion, such as sulfurous-acid gas, is forced into the chamber in which the fire exists and in which the temperature of the gases in the chamber is reduced by causing the gases to circulate from and to the chamber through a refrigerating apparatus. Such method forms the subject-matter of my Patent No. 633,807, dated September 26, 1899, and improved apparatus for the practice of the process is also described in my pending application for Letters Patent filed July 21, 1899, Serial No. 724,660, of which last-mentioned case my present application is a division.

In the extinguishment of fires, as described in my prior patent and application, I have found that even after the fire has been subdued and the temperature of the chamber reduced to quite a low point there is still danger of reignition when air is suddenly admitted to the chamber, this danger being apparently due to the character of the charcoal which is apt to be formed in the chamber and which has a strongly-marked tendency to condense and absorb oxygen, a pronounced rise of temperature not infrequently leading to reignition, and this danger I have discovered can be obviated by gradually admitting air to the chamber after the fire is extinguished and the temperature reduced to a safe point.

Reference being now had to the drawings which illustrate my improved apparatus, as described in my application of July 21, 1899, Figure 1 is a diagrammatic elevation, partly in section, and Fig. 2 is a plan view of the chamber on a reduced scale.

A is the chamber in which fire is apprehended and which is provided with my apparatus, A′ indicating a door leading into the chamber.

B is a charging-conduit leading into the chamber and situated, preferably, at some distance above its bottom. At convenient points, such as B′, branch pipes B^2 lead from the pipe B for the more even distribution of the gas over the bottom of the chamber.

B^3 B^3, &c., indicate openings from the pipes B and B^2 for the exit of the gas, preferably arranged, as shown, on the under side of the pipes.

B^4 is a stop-cock in the pipe B.

C is a gas-exit pipe leading from the top of the chamber, having, like the pipe B, branches C^2, indicating the openings for the entrance of gas which, in the case of pipe C and its branches, are preferably formed in the top of the pipe, as shown.

C^4 is a stop-cock in the pipe C, and C^5 an air-admission passage leading into the pipe C, having a regulating-damper, (indicated at C^6.)

D indicates a gas-generating furnace consisting, as shown, of a retort-chamber D′, heated by means of a furnace D^2, and flues D^3 D^4, leading around the retort from the furnace to a stack D^5.

D^6, D^7, and D^8 are trays for holding sulfur, arranged in the retort D′ to form a staggered passage, as shown.

D^9 is a deflecting-plate leading from the top of the retort to a point near the surface of the sulfur in the upper tray D^8.

E is a trap, F a cooling apparatus, and G a suction-fan.

H H indicate coupling connections by which the generating and circulating apparatus are coupled to the pipes B and C.

I is a conduit leading from the pipe C to the lower part of the furnace-retort D′. An air-admission opening I′, situated in said pipe, is provided with a regulating-damper I^2, while I^3 indicates a stop-cock.

J is a conduit leading from the top of the retort-chamber into the trap E, the ends J′ J′ of said conduit opening near the bottom of the trap.

K is a conduit leading from the trap, its

end K′ opening near the top thereof into the water-cooling device at F, K^2 indicating a stop-cock in said conduit.

The cooling device is illustrated in a conventional way, consisting of an upper chamber F′ and a lower chamber F^2, connected through an intervening chamber F^3 by vertical pipes f^3, F^4 and F^5 indicating entrance and exit pipes for water, which is passed through the chamber F^3.

L is a by-pass pipe leading from the pipe I to the pipe K and provided with a stop-cock L′.

M is a conduit leading from the lower chamber of the cooling device F to the fan G, said pipe being provided with an air-admission passage M′, having a regulating-damper M^2.

N is a pipe leading from the fan G and connected to the pipe B.

In ordinary operation the stop-cocks C^4, I^3, K^2, and B^4 are opened and the air-passages C^6, I^2, and M^2 closed, as is also the stop-cock L′. The fan being then set in operation, the air is drawn from the chamber A through the pipes C and I into the retort D′, where its oxygen combines with the sulfur, forming sulfurous-acid gas, and the mixture of said gas and nitrogen is then drawn through the pipe J into the trap E, where any flowers of sulfur is intercepted, thence through the pipe K, cooling device F, and pipe M into the fan, which forces it through the pipes N and B into the chamber A. This circulation is maintained until the chamber is filled with gas of the desired strength, it sometimes being advisable to admit some air through the opening I′ in order to increase the production of sulfurous-acid gas. When the gas is of sufficient richness, the stop-cocks I^3 and K^2 are closed and the stop-cock L′ opened. The forced circulation caused by the fan G then continues through the pipes C, I, and L to the cooling device F and from it through the pipes M, N, and B to the chamber. When the chamber has been sufficiently cooled by means of this circulation, I admit air gradually to it. Thus in the apparatus shown it can be done either by opening the passage C^5 or by opening the passage M′, either device permitting the entrance of a regulated amount of air into the circulating gas. By preference I will open at the same time, at least in the latter part of the operation, both the air-passages C^5 and M′, closing the cock L′. The fan then draws in atmospheric air, which it forces to the chamber, the surplus gas in the chamber escaping through the opening C^5.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The method of extinguishing fires in closed compartments which consists in maintaining a circulation through the chamber and a gas-generating furnace in order to create and maintain in the chamber an atmosphere incapable of supporting combustion, and extinguish the fire, then maintaining the circulation through the chamber and a cooling device until the temperature of the chamber is reduced to a safe point and then gradually admitting air to the chamber so as to avoid the reignition of charred material.

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