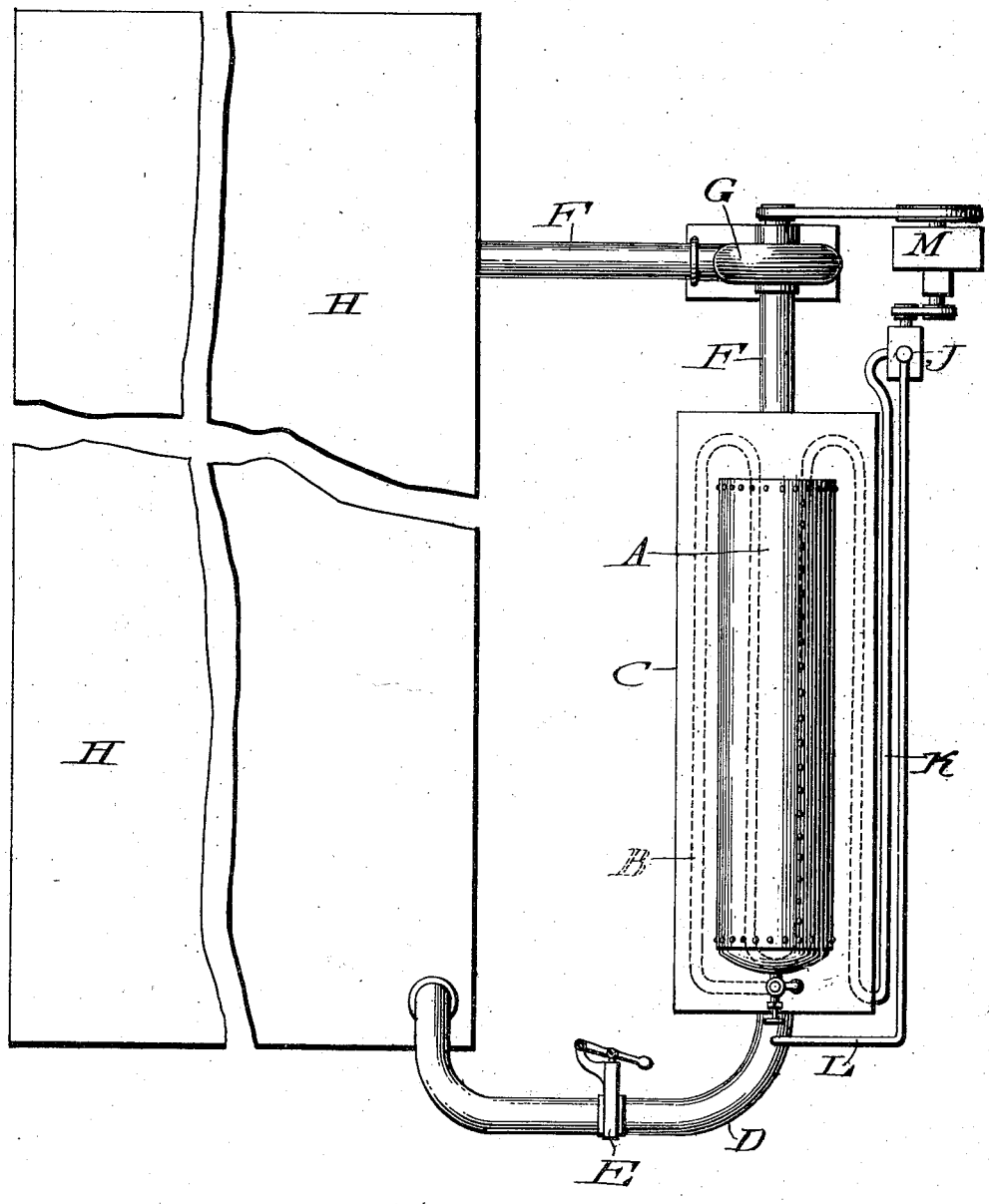
No. 702,713. Patented June 17, 1902.

# H. B. FEBIGER.

## APPARATUS FOR EXTINGUISHING FIRES IN CLOSED COMPARTMENTS.

(Application filed Jan. 14, 1901.)

(No Model.)




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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR EXTINGUISHING FIRES IN CLOSED COMPARTMENTS.

SPECIFICATION forming part of Letters Patent No. 702,713, dated June 17, 1902.

Application filed January 14, 1901. Serial No. 43,115. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY B. FEBIGER, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Processes of Extinguishing Fires in Closed Compartments, of which the following is a specification.

My invention consists in a novel process of extinguishing fires in a closed compartment, which consists in employing a compressed or liquefied combustion-non-supporting gas, changing the state of the same from a liquid to a gaseous form, then reducing the temperature of the same below the freezing-point of water, and introducing it into said compartment.

In carrying out my process I preferably employ in practice sulfur dioxid as the gas, and I evaporate it in a suitable chamber or evaporator, such as a coil of pipes, and then introduce it into the compartment in which the fire is located, and in the accompanying drawings I have shown an apparatus by means of which my process can be effected.

The figure represents a diagrammatic plan view of the apparatus.

Referring to the drawing, A designates a tank or tanks containing, preferably, liquefied sulfur dioxid, said tank having a suitable connection and valve with the coil of pipes B on the interior of the chamber C, which latter, with the pipes, constitute the evaporator, and said chamber being provided with an inlet D, having a gate E, it being seen that said pipe D discharges into said chamber C at a suitable point and is connected with the compartment H for the purpose of utilizing heat from the fire to assist in the evaporation of the liquefied gas in the evaporator.

F designates a pipe leading from said chamber C, having a suitable valve and communicating with a fan or other device G and connecting with the compartment H.

J designates a vacuum-pump, having a pipe K, connected with the coil B, and a pipe L, which discharges into pipe D at substantially the inlet to the evaporator.

M designates an engine or motor, which is suitably connected with the necessary parts to operate the same.

The liquefied gas—for example, sulfur dioxid—is held in the tank A, and by properly manipulating the valve the liquid is changed to a gas by being introduced into the pipes B in the chamber C and the change of state takes place, the vacuum-pump J being employed to create a vacuum, and thus reduce the pressure in coils B in order to cause the liquefied gas to evaporate at a very low temperature, the discharge from the vacuum-pump forcing the gas through the pipe L and into the pipe D, from thence into the chamber C and around, between, and over the coil B, the thus-cooled gas being withdrawn from the chamber C by the fan G through the pipe F and introduced into the compartment H, whereby the fire therein is instantly extinguished and the temperature in the compartment and of the material is reduced below any possible ignition-point.

As it is necessary to have a certain amount of heat to permit or insure the proper evaporation of the liquefied gas under certain conditions, I have connected the inlet D with the interior of the compartment H in order at the proper time to cause hot air to enter the evaporator by being introduced into the chamber C to be directed against the coil B in order, as above stated, to assist in the proper evaporation of the liquefied gas.

It will be seen that by this method I am enabled to reduce the temperature of the gas in the chamber or coil B to a very low degree, the heat and the vacuum assisting in the proper evaporation, and by passing the gas through the chamber a temperature below the freezing-point of water is obtained, and it is even possible to secure a 0° or lower temperature. By this process the fire is instantly extinguished, and the intense cold of the gas reduces the temperature of the goods and that of the compartment below the ignition-point, and spontaneous combustion or charring due to nascent heat is overcome.

In another application filed by me on January 21, 1901, Serial No. 43,963, for process for extinguishing fires in closed compartments I claim certain features therein, such as employing a liquefied combustion-non-supporting gas and evaporating the same and using heat at a suitable point to assist in the evaporation and also creating a vacuum in

the evaporator, and I do not, therefore, claim the same herein.

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

1. The process of extinguishing fires in a closed compartment which consists in employing a liquefied combustion-non-supporting gas, changing the state of the same to a gas employing heat from the fire to assist in the evaporation of said gas and then introducing the gas into the compartment.

2. The process of extinguishing fires in a closed compartment, which consists in employing a liquefied combustion-non-supporting gas, evaporating the same in a proper evaporator, directing hot air from the compartment in which fire exists against a suitable portion of said evaporator to assist in the evaporation of said gas and introducing the gas into the compartment.

3. The process of extinguishing fire in a closed compartment, which consists in employing a liquefied combustion-non-supporting gas, changing the state of the same and discharging into an evaporator, directing hot air from the compartment into the evaporator, and introducing the gas into the compartment.

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Witnesses:
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