

No. 702,714.

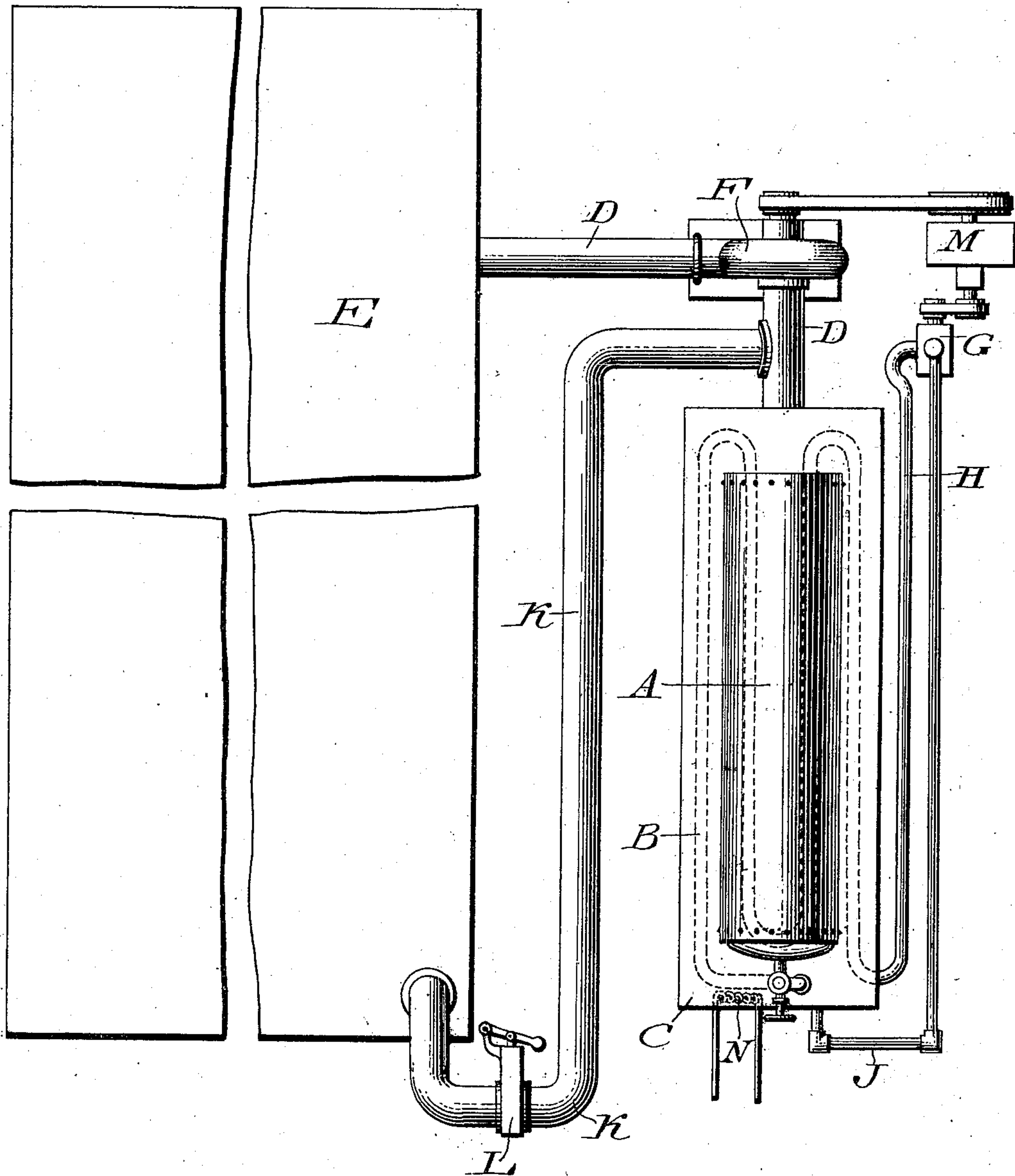
Patented June 17, 1902.

H. B. FEBIGER.

PROCESS OF EXTINGUISHING FIRE IN CLOSED COMPARTMENTS.

(Application filed Jan. 21, 1901.)

(No Model.)



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## PROCESS OF EXTINGUISHING FIRE IN CLOSED COMPARTMENTS.

SPECIFICATION forming part of Letters Patent No. 702,714, dated June 17, 1902.

Application filed January 21, 1901. Serial No. 43,963. (No specimens.)

*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 Fire in Closed Compartments, of which the following is a specification.

My invention consists in a novel process of extinguishing fires in closed compartments, 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, whereby the temperature is reduced, then introducing the gas into the compartment, and then removing said gas and again introducing it into the compartment.

It further consists in adding and enriching said gas as it is withdrawn from the compartment and before it is again introduced into the compartment, whereby the strength of the said gas is increased.

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

The figure represents a diagrammatic view of the apparatus.

Referring to the drawing, A designates a tank or tanks containing, preferably, liquefied sulfur dioxide, said tank having a suitable connection and valve with the evaporator or coil of pipes B, which latter is inclosed within the chamber C.

D designates a pipe which leads from said chamber C and connects with the interior of the compartment E, a suitable fan or other forcing device F being employed to withdraw the gas from the chamber and force it into the said compartment.

G designates a vacuum-pump having a pipe H connected with the coil B, and J designates a pipe which discharges into the chamber C at a suitable point.

K designates a pipe which is connected with the interior of the compartment E, at the bottom or other suitable point thereof, and dis-

charges at a suitable point into the pipe D, it being seen that the fan F operates to withdraw the air from the said compartment E and to again introduce it into the same, said pipe K being provided with a gate L for controlling the passage of the gas and atmosphere therethrough.

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

N designates a pipe or a coil which is connected with a suitable source for supplying heat, whereby the pipe or evaporator B can be heated at a suitable point, if necessary, to insure proper evaporation of the gas, it being evident that the heat may come from any well-known source.

A liquefied gas—for example, sulfur dioxide—is held in the tank A, and by properly manipulating the valve the liquid is changed to a gas by evaporating into the pipes B in the chamber C, the vacuum-pump G being employed to create a vacuum and reduce the pressure in the 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 J and 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 F through the pipe D and introduced into the compartment E, whereby the fire therein is instantly extinguished and the temperature in the compartment and material is reduced below any possible ignition-point. By the proper manipulation of the gate L the fan F withdraws the air from the compartment E and returns the same into the compartment through the pipe D, it being seen that before the gas which has been taken from the compartment is again introduced into the same it is enriched by the cooled gas from the chamber C, whereby a temperature below the freezing-point of water is obtained, and it is possible to secure the zero degree 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 an application for patent filed by me on



January 14, 1901, Serial No. 43,115, for a process for extinguishing fire in closed compartments I claim therein the use of a liquefied combustion-non-supporting gas, changing the  
5 state of the same and the use of heat in the fire to assist in the evaporation of the said gas, 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  
10 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  
15 gas in a suitable evaporator, using heat at a suitable point, creating a vacuum in the chamber, to assist in the evaporation, and then introducing said gas into the compartment.

2. The process of extinguishing fires in a  
20 closed compartment, which consists in employing a liquefied combustion-non-supporting gas, changing the state of the same to a gas in a suitable evaporator, using heat at a suitable point, creating a vacuum in the chamber, to assist in the evaporation, then introducing said gas into the compartment, removing said gas from said compartment, and then  
25 again introducing said gas into said compartment.

3. The process of extinguishing fires in a  
30 closed compartment, which consists in employing a liquefied combustion-non-support-

ing gas, changing the state of the same to a gas in a suitable evaporator, using heat at a suitable point, creating a vacuum in the chamber, to assist in the evaporation, then introducing said gas into the compartment, removing said gas from said compartment, then enriching the same by the addition of more gas, and then again introducing said gas into said  
35 compartment.

4. The process of extinguishing fires in closed compartments, which consists in employing a liquefied combustion-non-supporting gas, changing the same into a gas in an  
45 evaporating-chamber, whereby the temperature is reduced, then passing the gas around the exterior of the evaporating-chamber so that the temperature is still further reduced and then introducing the gas into the com-  
50 partment.

5. The process of extinguishing fires in a closed compartment which consists in employing a liquefied combustion-non-supporting gas, changing the same into a gas, creat-  
55 ing a vacuum during the said change of state, whereby a very low temperature is obtained and then introducing the gas into the compartment.

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Witnesses:

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