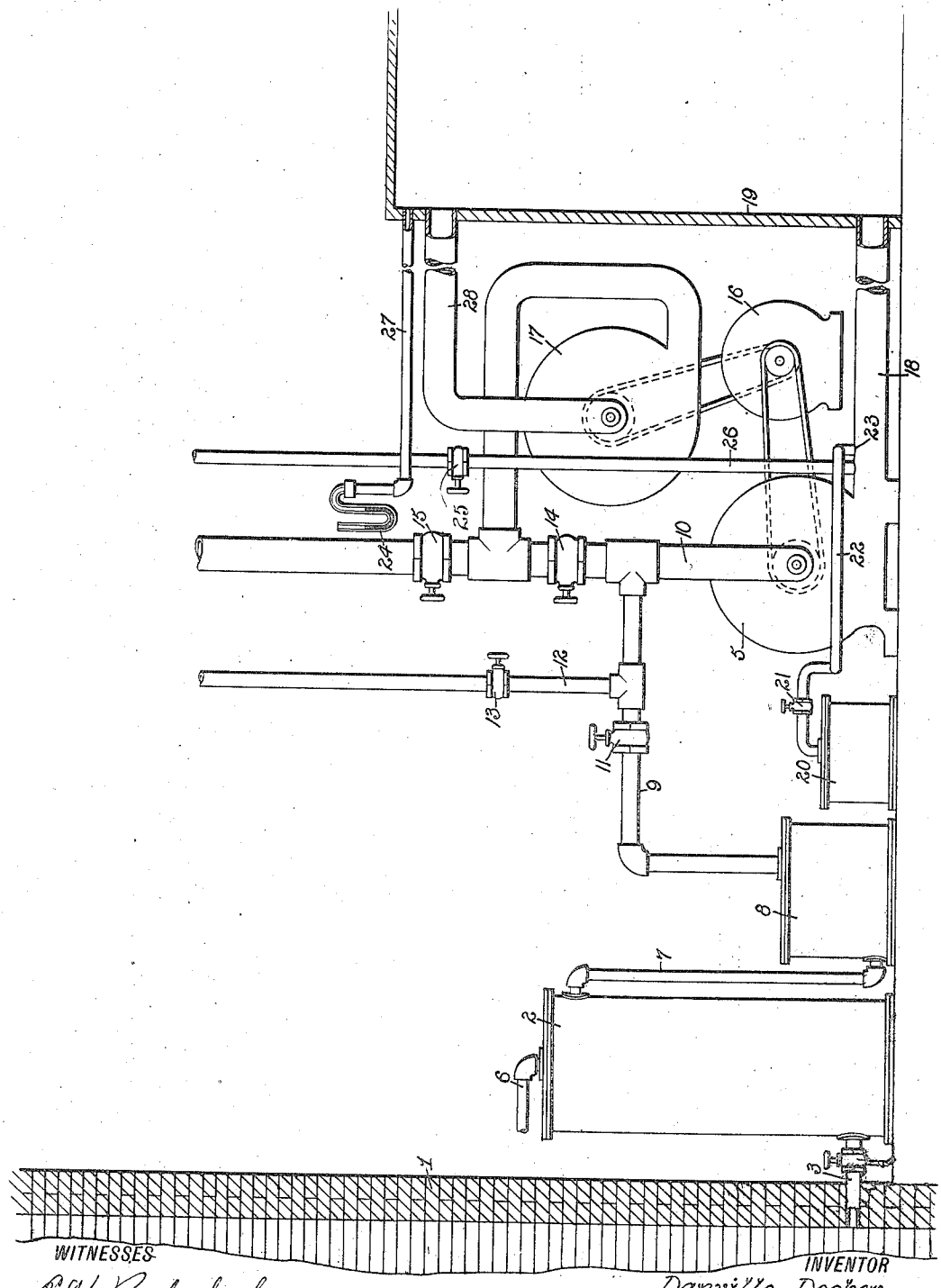
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SYSTEM OF EXTINGUISHING FIRE.

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WITNESSES

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SYSTEM OF EXTINGUISHING FIRE.

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To all whom it may concern:

Be it known that I, DANVILLE DECKER, a citizen of the United States, and a resident of Rockville Center, in the county of Nassau and State of New York, have invented a new and Improved System of Extinguishing Fire, of which the following is a full, clear, and exact description.

This invention relates to an improved system of extinguishing fires by the utilization of what may be termed smothering gases, and has for an object the utilization of gases from smoke stacks either alone or mixed with carbonic acid gas.

Another object in view is to clean the smoke from the smoke stack of certain particles and then discharge the same into a compartment or space in which a fire is located for preventing combustion by the expulsion of air.

A further object of the invention is to utilize a smothering gas which is circulated through a compartment after the air has been expelled.

In the accompanying drawing:—

The figure is a diagram of the device utilizing gases for extinguishing fires and disclosing a mechanical structure for carrying out the method of extinguishing fires.

Referring to the accompanying drawing by numerals, 1 indicates a smoke stack of any desired kind to which the cooling or condensing tank 2 is connected, a suitable pipe 3 acting as a connecting member, which pipe is provided with a regulating and controlling valve 4. The device may be used in factories and buildings of any kind, or on ships where it is of special value, as there are always plenty of gases in the smoke stack of a ship and pipes may be readily extended to various compartments in a ship so as to put out the fire at any point quickly and easily through robbing the compartment of air and at the same time supplying a non-combustible gas. After valve 4 has been turned on and the pump or blower 5 started, gas in the smoke stack 1 will pass into tank 2 and will be cooled and somewhat condensed by reason of the water forced therein through pipe 6, said water either remaining in the tank for washing the gas or being allowed to flow therefrom as may be desired. In any event, the gas is compelled to go through a certain quantity of water for cooling and then the cooled condensed gas is discharged out through the pipe 7 to the purifier 8, which purifier is provided with material designed to remove the sulfur in the gas, after which the de-sulfurized gas is discharged through pipe 9 to the main pipe 10. A valve 11 is arranged in pipe 9 so as to close the pipe whenever desired. A combined air supply and relief pipe 12 is connected with pipe 9 between the valve 11 and pipe 10 so as to permit a discharge of certain gases to the atmosphere or permit the drawing in of atmosphere. A valve 13 is arranged in pipe 12 to control the passage of matter moving therethrough or to entirely shut off the pipe. The main pipe 10 is provided with valves 14 and 15 designed to shut off the pipe at different points as desired.

A motor of any desired kind is provided for operating the fan or blower 5 and also the fan or blower 17. As the fan or blower 5 draws in the purified gases the same gases will be discharged out pipe 18, which pipe leads to one or more compartments 19 as desired. When any of the compartments 19 in a ship or in a building has a fire started therein the influx of gas through pipe 18 will force the air from said compartment and substitute said gas, which will not support combustion. When the gas is first entering through pipe 18 the valve 14 in the main pipe 10 is closed and valve 15 opened, whereby the fan or blower 17 will draw the air from compartment 19 and force the same out the upper end of pipe 10. As soon as all of the air has been drawn out of the compartment, valve 14 is opened and valve 15 closed, whereupon there will be provided a circulation of gases in the compartment 19.

In order to produce a better smothering gas it is found desirable to add carbonic acid gas to the gas passing through pipe 18 and this gas is arranged to be supplied during the supplying of the gas from the smoke stack and also after the flow of the gas from the smoke stack has been stopped. In order to provide a proper supply of carbonic acid gas the member or tank 20 is used, said member being a contrivance of any kind for generating carbonic acid gas, which gas passes through valve 21 and pipe 22 to the pipe 18 at point 23 and from thence to the compartment 19 where it mixes with the other gas in said compartment. After the air has all been withdrawn from the compartment 19 and gas from the smoke stack and carbonic acid gas have been substituted,

the gas from the smoke stack is turned off but usually the flow of the carbonic acid gas is allowed to continue, said gas being circulated by the fans or pumps 5 and 17 as heretofore described. It is of course understood that the operator will carefully watch the pressure device or regulator 24 and when there is any indication of any pressure in the compartment 19 above the equilibrium pressure of the atmosphere the operator will open valve 15 or valve 25, as desired, preferably the valve 15, so that some of the gas from the smoke stack may be discharged and the carbonic acid gas allowed to still flow into the compartment. In this way the gas in the compartment will become richer and richer in carbonic acid gas, the continuing flow of the gas being permitted as long as the operator may desire. When the operator decides that the gas is of the proper mixture valve 21 is shut off and also valves 15 and 25 are shut off so that the gas may be freely circulated as much as desired.

It will be noted that the pressure member or indicator 24 is connected to the compartment 19 by pipe 27 so as to indicate whenever there is provided any pressure in the compartment. The pipe 27 is used for convenience in order to have the neutral indicating member 24 at a place where the operator may constantly examine the same and be near the various valves heretofore described so as to provide a proper regulation. The use of stack gases for smothering purposes is known and it is also known that a carbonic acid gas will act as a smothering medium, but it is too expensive for ordinary use as a smothering gas. The construction and arrangement of parts as shown in the drawings will allow a large volume of the smoke stack gases to be used and mixed with a comparatively small quantity of carbonic acid gas so as to provide a cheap and comparatively large volume of smothering gas in compartment 19. The aim of the invention is to produce a device wherein the pressure interiorly and exteriorly of the compartment will be substantially the same. It will be noted that the pressure in the compartment 19 is produced by the smothering gas or a gas which will not support combustion, while the pressure exteriorly of the compartment is produced by the ordinary pressure of the atmosphere.

After the air has been drawn from the compartment and the gases have been circulated therethrough for a period of time, the operator can tell by an examination of thermometers arranged in pipe 28, or if desired, any of the other pipes, whether or not fire still exists in the compartment, and by reason of the heat registered on the thermometer. In case the thermometer indicates that the fire has been extinguished, valves 11, 14, 21 and 25 are closed and valves 13 and 15 opened, whereupon fan or blower 5 will draw in fresh air through pipe 12 and force the same into the compartment 19, while fan 17 will draw the gases from compartment 19 and force the same out pipe 10 to the atmosphere. This re-supplying of the compartment with fresh air will continue until all of the gases are driven therefrom, and then the compartment may be entered for inspection and further use.

What I claim is:

1. In a device for extinguishing fire, a fan member for drawing gases from a smoke stack and forcing the same into a compartment, means for drawing air from said compartment, and manually operated elements for causing said fan and said means to act as a circulating system for circulating gases in said compartment.

2. In a device for extinguishing fire in a compartment, a fan for drawing gases from a smoke stack and forcing the same in said compartment, means for cooling said gas, means for removing the sulfur from said gas, a fan for removing the air from said compartment, manually operated elements for causing said fans to act as circulating members after the air has been removed, manually operated means for causing the first mentioned fan to force air into said compartment, a manually operated member for causing the second mentioned fan to expel the gases from said compartment whereby said compartment is first filled with a smothering gas and then the gas is circulated in said compartment and finally the gas is expelled and fresh air substituted.

3. A device for extinguishing fire, comprising a pump or fan for drawing gases from a supply and forcing the same into a compartment or inclosure, means for cooling said gases before they reach said fan, means for removing sulfur from said gases before they reach said fan, means for supplying an additional amount of carbonic acid gas to the outlet pipe of said fan, a fan for withdrawing the air from said compartment and manually actuated means for causing said fan to circulate the gases in said compartment.

4. A device for extinguishing fire in substantially closed compartments, comprising a gas cooling tank, means for directing a gas to said cooling tank, means for removing sulfur from said gas, a pair of fans and a system of pipes and valves connecting said fans together and to said compartment and one of said fans to said purifying device.

5. In a device for extinguishing fires in a room or compartment, the combination with a smoke stack, of a fan connected to said smoke stack and said compartment for drawing gases from said smoke stack and forcing the same in said compartment, means connecting the eye of said fan and

said compartment, a second fan interposed in said means for circulating the gas in said compartment, a gage connected with said compartment for indicating the pressure in the compartment, manually operated means for causing an equalization of the pressure in the compartment to the pressure exteriorly of the compartment, and a plurality of manually operated means for causing said second mentioned fan to act as a gas removing device and the first mentioned of said fans to act as an air supplying device.

6. The process of extinguishing fires, consisting in the cooling of a certain quantity of coal gas, removing sulfur therefrom, forcing said purified gas into a compartment where the fire is located for smothering the fire, removing the air from said compartment substantially as fast as the gas is supplied, and then circulating the gas in the compartment.

7. The process of extinguishing fires, consisting in producing a smothering gas, forcing said gas into a compartment, drawing the air from said compartment, and then simultaneously removing said gas and supplying fresh air to the compartment.

8. A device for extinguishing fire, comprising means for supplying a smothering gas, a fan for forcing said gas into a compartment, a second fan for drawing the air out of said compartment, means for indicating the equilibrium of the air exterior of the compartment with the gas interiorly thereof, and means including said fans for circulating the gas in said compartment.

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